

UNITED NATIONS
ECONOMIC COMMISSION FOR AFRICA



Development Research Papers Series

**Financial Deepening, Credit
Availability and the
Efficiency of Investment:
Evidence from Selected
African Countries**

Sylvanus I. Ikhide

October, 1992

Research Paper No. 2

ECAC
330.34
DRP2

United Nations
Economic Commission for Africa
Socio-Economic Research
and Planning Division



UNITED NATIONS
ECONOMIC COMMISSION FOR AFRICA

DRPS

Development Research Papers Series

**Financial Deepening, Credit
Availability and the
Efficiency of Investment:
Evidence from Selected
African Countries**

Sylvanus I. Ikhide

October, 1992

Research Paper No. 2

United Nations
Economic Commission for Africa
Socio-Economic Research
and Planning Division



DEVELOPMENT RESEARCH PAPERS SERIES (DRPS) is devoted to Africa's development problems and their solutions. The aim is to encourage and promote discussions of development research findings and methodologies relating to the African region and to make available to a wider audience the results of research, especially in the areas of basic development policies and trends, economic projections and forecasting, socio-economic transformation and the dynamics of change, and economic integration.

Additional copies of the published papers can be obtained by writing to:

The Director
Socio-economic Research and Planning Division
United Nations Economic Commission for Africa
P.O. Box 3001
Addis-Ababa, Ethiopia
Tel. (251-1) 51 72 00
Telex 21029 UNECA ET
FAX (251-1) 51 44 16

The views expressed in the development research papers series are those of authors alone and do not necessarily represent the views of the UNECA.

FINANCIAL DEEPENING, CREDIT AVAILABILITY AND THE EFFICIENCY OF INVESTMENT: EVIDENCE FROM SELECTED AFRICAN COUNTRIES

By

Sylvanus I. Ikhide

Research Paper No. 2

This paper was written while the author was a post-doctoral fellow at the United Nations Economic Commission for Africa 1991-1992.

TABLE OF CONTENTS

I.	Introduction	1
II.	Money and Economic Growth: A Theoretical Background . .	3
III.	Trends in Financial Development	5
IV.	Financial Deepening	7
	4(i) Model specification	7
	4(ii) Data and estimation	8
	4(iii) Results	9
V.	Reserve Requirements, Inflation and the Mobilisation of Financial Savings	10
	5(i) The reserve requirements tax	11
	5(ii) Reserve requirements and bank deposit interest rates: A theoretical framework	12
	5(iii) Measuring the required reserves tax	12
	5(iv) Interest rate reforms and inflation	14
	5(v) Interest rate and inflation: A theoretical framework	15
	5(vi) testing the inflation-interest rate relationship .	17
VI.	Policy analysis	20
	6(i) Testing for structural shifts	21
	6(ii) Simulation	22
VII.	Policy Implications of findings	24
VIII.	Summary and Conclusions	31
	DATA APPENDIX	36
	Appendix I: Disaggregated financial deepening equations . . .	37
	Appendix II: Disaggregated financial deepening - OLS regression results	40
	Appendix III: Government deficits, money supply and inflation in selected SSAS	43
	APPENDIX IV: Figures	59
	References	61

Financial Deepening, Credit Availability and the Efficiency of Investment: Evidence from Selected African Countries

I. Introduction

The role of interest rate in the savings mobilisation process remains at best controversial. While economic theory would tend to suggest a positive correlation between savings and the deposit rate of interest, the result of most empirical work, particularly in developing countries, do not often conform with this expectation¹. A number of factors outside yield, such as low income, high and skewed consumption patterns, structural factors which constrain the ability of African governments and people to raise revenues necessary to finance development expenditures, affects savings in most of these countries (ECA, 1991). However, uncertain as we are about the effects of interest rates on the amount that people save, their effect on the form in which people save has been fairly established in the literature. High interest rates will tend to favour financial over non-financial forms of savings and, since an increase in overall financial depth has been shown to be positively correlated with growth in GDP, (Gelb, 1989), a policy of private savings mobilisation that aims at an increase in overall financial depth through the expansion of interest-bearing instruments, it is argued, will help to maximize output growth in the economy. In other words, high interest rates by promoting financial deepening, could help in the expansion of domestic capital formation and hence stimulate economic growth².

Although the line of causation outlined above seems to be fairly straight-forward, not much evidence has been provided on its workings in Sub-Sahara Africa. The financial market in most of these countries is dominated by the banking system. A number of factors constrain the ability of the banking system to efficiently mobilize financial savings in most of these economies. These include ceilings placed on lending and deposit rates, high reserve requirements that are imposed on the banking system which may result in low deposit rates and contraction of private sector credit, and, inflationary expectations that tend to reduce the real yield on deposits and thus encourage the holding of inflation hedges.

The channel through which these various processes operate have not been clearly documented in developing countries. For instance, while it is expected that removing ceilings on interest rates will help to mobilize savings by switching savers preference from unproductive real assets to financial assets, the impact of such a policy on inflation has to be ascertained.

¹See for instance Umo (1981), ECA/ADB (1987) for a sample of studies on Africa and for a broader Survey; Balassa (1990) and Thornton (1991) provide useful starting points.

²We are aware of the controversy as to the direction of causality between financial depth and economic growth (Patrick, 1966). The works of Jung (1986) and Gelb (1989) which covered several countries will tend to confirm that within the context of portfolio choice by individuals, the rate of interest on deposit money can be treated as an exogenous variable and causality assumed to run from financial deepening to economic growth.

High interest rates may lead to cost-push inflation via the financing of working capital with borrowed funds. If high deposit rates are inflationary, the mobilization of financial savings through a policy of high deposit rates may be self-defeating as an unstable price level may serve as a disincentive to holding financial assets, thus impeding financial deepening and, hence, economic growth. At a time when developing countries are being asked to liberalize interest rates, the end-result of such a policy action could be catastrophic. Also, reserve requirements are widely used in developing countries as a policy tool for ensuring the liquidity of the banking system, a medium for controlling the supply of money or as an allocative tool. Apart from its ease of operation and the certainty of its effect, it also serves as a ready source of funds to the government in financing its deficit. However, it is an implicit tax on the banking system and its magnitude may impact on the rates that banks can pay depositors in addition to the fact that it is potentially capable of crowding out private investment. Under these circumstances, any policy action that will rely on the financial system to enhance financial deepening would have to take the various magnitudes into consideration.

Thus, the objectives of this study are:

- (i) to examine the role of deposit interest rates in the process of financial deepening, the supply of loanable funds and the enhancement of the efficiency of investment;
- (ii) to examine the impact of high reserve requirements on the deposit generating efforts of banks and, hence, their effect on the mobilization of savings;
- (iii) to examine the nature of the relationship between high deposit interest rates and inflation; and,
- (iv) finally to examine, through simple policy simulation, the effect of policy alternatives (changes in nominal deposit rates and/or changes in the price level) on the level of financial savings.

The study is divided into eight parts. Part 1 is an introduction. In Part 2, we provide the theoretical background to the study by reviewing the literature on the relationship between money and economic growth. Part 3 examines the trends in financial development in our sample of countries. In Part 4, we formulate a model to explain the role of interest rates in financial deepening, the supply of loanable funds and the efficiency of investment. Part 5 is devoted to examining the effect of high reserve requirements and inflation on the mobilization of financial savings, while Part 6 attempts some policy simulation exercises. In Part 7, the policy implications of our empirical findings are examined and, finally, in Part 8, we present our summary and main conclusions.

II. Money and Economic Growth: A Theoretical Background

Economic theory attributes great importance to the rate of physical capital formation in the process of economic growth. The role of money in this process has remained a controversial issue in the literature. If money is a substitute for physical capital, an increase in the rate of interest on a monetary asset would result in a portfolio shift towards such assets and the results would be a reduced rate of physical capital accumulation and growth. This view derived from the neo-classical model of Tobin (1965) and was later popularized by Johnson (1967). It fitted well into the Keynesian predisposition towards low interest rates as a means of enhancing investment. The core of the argument in the substitutability hypothesis is that any form of incentives, inclusive of which is high deposit interest rates, which favours monetary accumulation negated rapid physical capital accumulation and hence economic growth. In this simple model of money and economic growth, Tobin assumes that households allocate their wealth between money and productive capital assets. The higher is the return on capital relative to money, the larger is the ratio of capital to money in household portfolios. This, in turn, produces a higher capital/labour ratio, higher labour productivity and hence greater per capita incomes. The real rate of economic growth accelerates during the transition from low to high capital/labour ratios that occurs after the relative yield on money falls. Hence, reducing the return on money increases welfare. One way of achieving this goal is by reducing the deposit rate of interest. Since low rates of interest also provided governments with an avenue to finance their deficits cheaply, a ready premise was found for using all kinds of interventionist measures to tax away excess financial holdings with the pretext of using the proceeds to finance productive enterprises.

The new thinking on the relationship between money and physical capital stems from the works of McKinnon (1973) and Shaw (1973) though this was later formalized by Galbis (1976) and Fry (1981). Two hypotheses can be gleaned from this "new orthodoxy". The first, which has come to be styled the structuralist thinking, argues that for investment purposes, it is the savings in financial assets which are crucial. Other things equal, an increase in the size of the financial sector leads to an increase in the amount of financial savings available as investible funds. It therefore follows that the size of the financial sector matters for the rate of capital formation (Fischer, 1981).

The more formalized argument of McKinnon and Shaw, styled the 'complementarity hypothesis', leads to conclusions that are radically different from the neoclassical and Keynesian positions. McKinnon (1973) in particular views with concern the fragmented nature of the capital markets of most developing countries which has unavoidably led to a proliferation of rates of return on capital and concluded that a model in which money and physical capital are seen as complements rather than as being substitutes (which suggests competition) may be more useful for developing countries. According to him, most investment in developing countries rely on self-finance. Given the lumpiness of investment projects, the requirement that the investor first accumulates the money balances needed to finance or acquire physical capital is enhanced. In this context a higher real return on money balances is likely to raise the investment/income ratio both because it enables would be investors to accumulate equity faster and also because this equity makes them more eligible for any limited institutional financing that may be available (Roe, 1989). Couched in this sense, money balances serve as a 'conduit' for physical capital

formation. McKinnon recognized that beyond, a point, the "conduit effect" may be overtaken by the "asset-competing effect" in which would be investors decide to forgo their physical investment, and, instead, establish high-yielding financial assets as a permanent part of their portfolio. This is the situation that creates the familiar negative relationship between investment and interest rate. As explained by Roe, these two effects need not have "adverse distributional implications" (Roe, 1989, p. 81). If the asset competing effect is dominant, the small producer acquires an income from financial assets while not necessarily reducing the scale of his own production.

Shaw's analysis is based on the debt-intermediation view. This view focuses on the role of deposit accumulation in expanding the lending potential of financial intermediaries. Higher deposit rates encourage the inflow of deposits into banks which in turn can increase lending, thereby stimulating externally financed investment. Both the debt-intermediation view and the complementarity hypothesis complement each other since the emphasis is on the use of high deposit rates to enhance investment projects financing either through own funds or in part with borrowings (Molho, 1986).

Evidence abounds that the financial sector in most developing countries intermediates only part of total investment; about half of all investment is self-financed. In a survey of 14 countries, it was found that businesses financed 55% of their investment from their own savings (in the form of depreciation allowances and retained earnings). Governments financed 72% of their investment from their savings and households as a group financed all of their investment from their savings (World Development Report 1989, p. 29). This evidence underlines the relevance of the complementarity hypothesis for developing countries.

One major limitation of self-finance is the size of investment that can be accommodated, given the limited amount of savings from the individual's sources. Given this major shortcoming, it is no wonder therefore that, in the course of development, institutions which borrow and lend money evolve. Financial intermediaries attract savings of surplus units by offering savers assets which yield income and/or convenience and lend these savings to investors according to their credit worthiness (Gurley and Shaw, 1967).

Even though financial intermediaries intermediate only part of total investment, their role in the allocation of savings cannot be overemphasized. It is necessary that savings be allocated to the most efficient investment if the optimum growth-enhancing effects of a higher savings rate are to be obtained. Studies have confirmed that the growth rate depends not only on the investment rate but also on the efficiency with which capital is used. Thus, unless savings are channelled to the most productive investment opportunities, the impact of a higher savings rate on the growth rate will be less than it would be (Asian Development Bank, 1985).

During the course of development, savers switch some of their saving from unproductive real assets to financial assets and hence expand the supply of credit in the economy. It is possible for high interest rates to play a crucial role in this process and thus engender financial deepening. Positive real interest rates favour financial savings over other forms of savings and therefore promotes financial deepening. In its own right, financial depth contributes to growth by improving the productivity of investment. There is empirical evidence to show that countries

that have sustained higher real rates of interest and that stable prices have generally had more robust real financial growth, Mckinnon (1991). A high or rising financial ratio has also been shown to be positively correlated with higher growth in real GDP. Gelb (1989) using data from 34 LDCs over the period 1965-85, classified countries qualitatively according to whether their real deposit rates of interest were positive, moderately negative or strongly negative for 2 sub-periods 1965-73 and 1974-85 to reflect periods of real output changes. He then tabulated average growth in real GDP and indicators of financial performance in each of the three interest-rate categories. For the sub-period 1974-85, average output growth was 5.6%, for countries with positive real interest rates, 3.8% for those with moderately negative real interest rates, and only 1.9% for those with strongly negative real interest rates. In addition to incorporating other macro-variables in his analysis, Gelb also undertook a quantitative analysis of the real interest rate effect on the growth of GDP by regressing output growth rate on real interest rate and a dummy variable to take account of the shift in output growth as from 1973. His estimates, literally interpreted, indicates that for every 1% increase in the real deposit rate, output growth increases by 0.2 to 0.25%. Provided financial institutions are good at selecting viable projects, greater intermediation will ensure that better instruments are financed and will therefore increase the average productivity of investment. This is based on the assumption that projects are given the chance to compete for funds and, as such, sub-optimal ones whose expected returns are below the new market clearing rate will drop out.

Thus the hypotheses to be tested here come under three categories: (i) that an increase in the real deposit rate of interest will lead to financial deepening; (ii) that an increase in the real deposit rate of interest will lead to an increase in the size of the investible funds from the banking sector; and, (iii) that high real deposit rates of interest will enhance the efficiency of investment. Our empirical results will provide evidence for the complementarity hypothesis of Mckinnon and the debt-intermediation view of Shaw.

III. Trends in Financial Development

The most commonly employed indicator of financial development in the literature is the financial intermediation ratio (FIR) which is defined as the ratio of total liquid liabilities of the financial system to GDP or GNP (Goldsmith, 1969). For our group of countries the financial system is approximated by the banking system so that our measure boils down to the ratio of M_2 or M_3 to GNP. The financial aggregates covered by these categories consist of currency in circulation, all types of bank deposits (excluding government and interbank deposits), and deposits held by non-bank financial institutions. In Table 1 we show the computed ratios of M_2 /GDP, which is our measure of financial depth, Quasi-money to M_2 (QM/M_2), M_2 to total Domestic Credit (M_2/DC), domestic credit to the Private sector to total domestic credit (DCP/DC) and domestic credit to government to total domestic credit (DCG/DC). Each of these ratios has a unique implication for the overall performance of the financial system.

Our indicator for financial development shows that most of the countries in our sample have witnessed a significant increase in the level of financial development over the past two

decades. However, the increase has been more substantial in some countries like Côte d'Ivoire, Ethiopia, Kenya, Lesotho, Mauritius, Seychelles and Togo. It is also worthy of note that a few countries have witnessed a decline in their FIRs; notable among which are Cameroon, Ghana, Tanzania and Zambia. The situation is glaring in Ghana where the FIR ratio fell from 25.7% in the 1976-1980 period to 13.5% in the 86-90 period, and Tanzania from 33.6% to 30.2% during the same period. Such broad assessments may tend to hide some of the basic inter-country differences. The evidence provided shows that during the period 1976-80, only 8 countries had FIR ratios above 30% and about 5 had FIR ratios below 20%. This is to be contrasted with the period 1986-90 when over 10 countries had FIR ratios above 30% but the number of countries below 20% had also increased to 7. Finally, when compared to the FIR ratio of the U.S.A., Japan, Britain and some Asian and Latin countries, (Table 2) the overall picture of financial development in Africa does not seem to be quite encouraging.

The ratio of Quasi-money to M_2 is also often used in the literature to gauge the level of financial development because it highlights the ability of the banking sector to create credit (Vogel and Buser, 1976). Financial deepening that is accounted for by the expansion of Quasi-money in relation to M_2 is often preferred to that which results from the expansion of M_1 (Gupta, 1984). Generally, this indicator shows a more improved performance. The ratio of Quasi-money to M_2 is over 50% during the 86-90 period in Kenya (53.4), Lesotho (56.0), Malawi (52.1), Mauritius (76.6), Seychelles (65.4), Swaziland (69.2) and Botswana (65.0). The ratio is not only low but has declined in Ghana, Sierra Leone, Togo and Ethiopia. From this evidence, financial growth in Ethiopia would have been accounted for more by the expansion of M_1 than Quasi-money.

We have proxied the "financialization of savings" (De Melo and Tybout, 1986) in this work by the ratio of M_2 to total domestic credit. This ratio is an indicator of the volume of financial savings (bank deposits) that is channelled into domestic credit by the banking system. The ratio has been considerably high in all countries, rarely falling below 80 per cent. More important for our analysis here, however, is the relative share of the government and the private sectors in total domestic credit. As shown in Table 1, government remains a dominant recipient of domestic credit in most countries. For the period 86-90, the share of government in domestic credit in ten countries Ethiopia, Gambia, Ghana, Lesotho, Nigeria, Seychelles, Sierra Leone, Somalia, Tanzania and Zambia was over 50%. It will be recalled that by our classification, all these countries except Ethiopia come under Group 1³. This group is characterized by high inflation rate, high nominal interest rates but highly negative real deposit interest rates. Most of the time, such excessive borrowing by the government from the banking system is used to

³For the purpose of this study, the countries were divided into two groups according to their inflation experience. Group 1 countries are those in which inflation rate has been high (above 10%) and variable - Botswana, Gambia, Ghana, Kenya, Lesotho, Malawi, Mauritius, Nigeria, Sierra Leone, Seychelles, Somalia, Tanzania and Zambia. For group 2, inflation rate is below 10%. These include Burkina Faso, Cameroon, CAR, Congo, Cote d'Ivoire, Ethiopia, Niger, Rwanda, Senegal and Togo.

finance government deficits, thus crowding out private sector investment. Where government expends such borrowings on items that are not directly growth related, the effect of an expanded financial depth on economic growth may be difficult to harness. Also, the effect of such pattern of credit allocation and utilization on inflation may be counterproductive for financial intermediation. The latter consideration will receive our attention in Part 5 of this study.

IV. Financial Deepening

4(i) Model specification

Three variants of the form of the financial deepening equation are tested in this work. In the first, financial depth as measured by the change in the logarithm of real money balances ($\Delta \log m$) is regressed on the change in the real deposit rate of interest ($d-\pi^e$), change in the logarithm of real income ($\Delta \log y$), and the lagged dependent variable. Thus,

$$\Delta \log (m) = f[\Delta \log y, \Delta(d-\pi^e), \Delta \log (m)_{t-1}] \dots\dots (1)$$

We expect that $f'y > 0$, $f'd-\pi^e > 0$ and $f'm_{t-1} > 0$.

The major shortcoming of this form of the equation is the aggregation of different components of m with varying opportunity costs. By lumping together non-income earning assets like currency and demand deposits and income earning financial assets like savings and time deposits, a problem is created due to aggregation bias. For instance, it has been argued that the relevant opportunity cost of holding currency and demand deposits may not be the real interest rate on savings but rather other short term rates on quick maturing money market instruments such as treasury bills. (Gupta, 1984). To take cognisance of this, we tested the general form of the equation.

$$\Delta \log Di/y = f(\Delta \log y, \Delta(d-\pi^e), \Delta \log Di/y_{t-1}) \dots\dots (2)$$

where Di - different classes of financial assets e.g. currency, demand deposits, savings and time deposits

Y = nominal GDP.

A priori, we expect that $f'Di/y_{t-1} > 0$, $f'd-\pi^e > 0$ and $f'y > 0$.

We also tested a third variant of the financial deepening equation by splitting $d-\pi^e$ into its two components i.e. d nominal deposit rate and π^e expected inflation. This will enable us capture the impact of inflation on the various components of money. This issue is not settled in the literature. There is the argument that inflation adversely affects the holding of all classes of financial assets and not just a narrow class. On the other hand it has also been argued that inflation will tend to encourage the holding of currency and discourage the holding of Quasi-

money. Empirical evidence is provided along this line by testing the form of the equation.

$$\Delta \log Di/Y = f(\Delta \log y, \Delta d, \Delta \pi^e, \log Di/Y_{t-1}) \dots (3)$$

with $f' d > 0$, and $f' \pi^e < 0$.

The direct effect of real interest rate on the investment ratio may be difficult to test in the context of developing countries. Also, to directly test the role of financial savings on gross domestic investment may pose some serious problems given that in most of these countries, a greater part of investment expenditure is undertaken by the government. Here we have approximated the private investment rate (I/Y) by the domestic credit to the private sector.⁴ Thus we regress the ratio of domestic credit to the private sector to GDP (DCP/Y) on the real interest rate ($d - \pi^e$), and per capita real income. The result will provide some evidence for McKinnon's complementarity hypothesis. A low or negative real deposit rate will engender low savings and hence the amount of investment that can be undertaken through lending to the private sector by banks. The existence of a positive relationship will support the fact that private savings is complementary rather than being a substitute for private capital formation. The equation tested is of the form.

$$\Delta \log DCP/Y_t = f(\Delta d - \pi^e, \Delta \log y/n, \Delta \log DCP/Y_{t-1}) \dots (4)$$

We expect a priori that $f' d - \pi^e > 0$, $f' y/n > 0$, $f' DCP/Y_{t-1} > 0$.

Finally, the hypothesis that a rise in real interest rates will increase the average investment efficiency is tested by regressing the incremental output capital ratio (IOCR) on the real deposit rate of interest.

$$\text{Thus, } IOCR = f(d - \pi^e) \dots (5)$$

A priori, we expect that $f' d - \pi^e > 0$.

4(ii) Data and estimation

The data used is as defined in the data appendix. From an econometric point of view, the financial deepening equations present a different set of estimation problems. Financial magnitudes are subject to rapid changes in consonance with developments in the money market and this may lead to nonstationarity in some of the variables. The enormity of this problem particularly for most African countries where rapid changes are going on in the financial sector cannot be underestimated. To avoid the econometric problems associated with non-stationary

⁴ Provided that we assume that government through adequate regulation and strict compliance to credit guidelines is able to channel bank lending into productive investment, this analysis is valid.

variables, the estimates of financial savings ratios are run in first-difference forms. To be able to capture the rapid changes taking place in the money market we have run the financial deepening equations using quarterly data. The domestic credit equations were also run using quarterly data. The need to do this is further underlined by the fact that for most of these countries, observable variations in nominal interest rates did not take place till the 1980s. Prior to this, interest rates were static. Finally, running the quarterly series will enable us to generate enough observations for our simulation exercises.

Running this regressions in quarterly series creates an estimation problem since GDP series are only available in annual form. Using the quarterly series for exports, we decomposed the annual series of GDP by the use of standard econometric techniques. There are a number of such procedures but the one we have used for this purpose is simple.⁵

4(iii) Results

The results of the financial deepening regressions are shown in Table 3. These results are presented for the sample of countries for which we had quarterly data on exports which was used in the decomposition of the GDP series. Out of the 17 countries in our sample, the real interest variable came out positive and significant in 12. The variable is positive and significant at less than 5% level in Burundi, Cameroon, Ghana, Kenya, Ethiopia, Nigeria, Niger, Rwanda, Sierra Leone and Zambia, and at 10% level in Cote d'Ivoire, Mauritius and Malawi. Though positive, it is not statistically significant in Botswana, Lesotho and Tanzania. The variable is significant in Swaziland though wrongly signed and it is neither significant nor rightly signed in Seychelles. The real GDP variable did not offer a very satisfactory performance as it is only positive and significant in 9 out of 17 countries. It is positive and insignificant in 5 countries and negatively signed in 5 other countries. The poor performance of the real income variable may be a result of the method employed in decomposing the annual GDP into its quarterly components.

The results of the disaggregated model is presented in Appendix 1 and 2. Appendix 1 contains the results of equation (2). The real interest rate variable came out with the right sign in respect of Quasi-money in Botswana, Burkina Faso, Burundi, Côte d'Ivoire, Ghana, Kenya, Nigeria, Mauritius, Malawi, Nigeria, Senegal, Somalia, Swaziland, Togo, Zambia and Sierra Leone, suggesting that an increase in the real interest rate will induce a portfolio shift into this form of deposit in these countries. However, the effect is not clearly demarcated with respect

⁵ See Mordi, C: "Estimation of demand and supply functions for Bank loans and advances in Nigeria" in Central Bank of Nigeria, Economic and Financial Review, March 1986, p. 40. Here the relation $Y = f(X)$ is used where Y = annual GDP, X = annual value of exports: Given 4 quarters in a year, total exports X is expressed as $X = x_i$ where x_i 's = quarterly export figures. Also, annual GDP (Y) is expressed as $Y = y_i$ where y_i = unknown quarterly GDP. Since X , Y and X_i 's are unknown, to construct the quarterly GDP (y_i) we use the relation $y_i = Y/X$, X_i for $i=1,2,3,4$. Therefore, $Y = y_i$.

to currency and demand deposits. The expected negative sign with respect to currency is observed in Botswana, Burundi, Cameroon, Côte d'Ivoire, Gabon, Lesotho, Malawi, Niger, Seychelles, Swaziland, Togo and Sierra Leone. In addition to these countries, the expected negative sign with respect to demand deposits is also observed in CAR, Ethiopia, Ghana and Rwanda. Two tentative conclusions can be reached here. That the real interest rate even if it does not induce a shift out of currency and demand deposits into Quasi-money, may induce a shift out of real into financial savings. This follows from our results where it has not been possible to establish a clear cut negative relationship between the M1 components and real interest rate but the preponderance of evidence suggests a positive relationship between Quasi-money and real interest rates.

Finally, the evidence provided in Appendix 2 (equation 3) on the impact of inflation on financial assets will tend to support the view that inflation does not only negatively affect the holding of a narrow range of financial assets but all categories of financial assets. The expected inflation variable came out with a negative sign in 16 countries with respect to Quasi-money. With respect to currency and demand deposits it came out with a negative sign in 14 and 16 countries respectively. This is contrary to our a priori expectations. The conclusion that we can garner from these results is that generally, inflation will tend to encourage the holding of physical assets and a shift away from holding domestic financial assets. The alternative to holding domestic financial assets in most cases is to hold foreign currencies or physical assets.

The empirical results provided in Table 4 gives support to the credit availability effect which we briefly outlined in Part 1. We estimated the credit availability equation (eq. 4) using quarterly series for 18 countries. The real interest rate variable came out with a positive sign in 16 countries and is positive and significant in 13. The real interest rate variable, per capita real income and the lagged dependent variable explained between 50-94 per cent of the changes in domestic credit to the private sector in all countries.

Equation (5) is estimated on the assumption that average investment efficiency is monotonically related to the incremental output capital ratio (IOCR). If this is so, we should expect that a positive association between the IOCR and the real deposit interest rate would provide empirical support for the efficiency proposition presented in Part 2 of this paper. Again for our sample of countries, the expected sign is reported in 19 countries. The real deposit interest rate is positive and significant in Burkina Faso, Ethiopia, Ghana, Kenya, Mauritius, Nigeria, Seychelles, Sierra Leone, Somalia, Tanzania and Togo; though significant, it came out with a negative sign in Côte d'Ivoire, Zambia and Botswana. This is reported in Table 5.

V. Reserve Requirements, Inflation and the Mobilisation of Financial Savings

In Part 4, we attempted to provide empirical evidence on the use of financial conditions defined in this study to include the real deposit interest rate, bank branches and financial deepening to mobilise savings and hence domestic credit and capital formation. We have argued

that the role of banks in this process cannot be underestimated since in most of the countries in our sample, the banking sector approximates the financial sector. Earlier, we provided evidence for the argument that inflation discourages the holding of all classes of domestic financial assets and thus encourages currency flight/substitution as well as investment in real (physical) assets as against financial assets. In the face of the evidence we provided in Part 4 on the workings of the complementarity hypothesis in our sample of countries, policies that will discourage inflation in addition to enhancing the potency of the real domestic interest rate as a tool for the mobilisation of private savings will also encourage the holding of domestic financial assets and hence engender financial deepening. Policies that work in the opposite direction will lead to financial repression, particularly if they inhibit the banking system from performing optimally.

There have been a lot of controversies with regards to the use of reserve requirements as a monetary policy tool in developing countries. The potency of this tool has never been in doubt. Rather the issue tends to be in its 'over-use'. Here, we examine some of the ways in which the reserve requirement tax can become an obstacle to financial development. The second issue that receives our attention is the use to which high nominal deposit interest rates can be put with particular attention to optimality and timing during an inflationary period.

5(i) The reserve requirements tax

Financial institutions are among the most heavily taxed bodies in developing countries. Apart from the normal taxes which are included in the Tax code and in budgetary accounting such as tax on gross receipts of banks, value added tax, tax on loan balances, taxes on bank transactions (e.g. stamp duties) and taxes on bank profits, banks are subjected to other forms of taxation which by their nature are implicit since they are not included in the tax code but could claim a significant proportion of bank resources and interfere with the efficient performance of their intermediary role. Examples of such taxes are interest rate ceilings, reserve requirements and the implicit tax on currency holdings. Interest rate ceilings has received some attention in this study. Currency tax often referred to as seigniorage is imposed on holders of currency by virtue of the fact that unlike other forms of government debt, currency does not pay interest. The higher the rate of inflation, the higher the nominal interest rate that is being avoided. Government can avoid paying interest on currency because it retains a monopoly of issue, and it is this monopoly profit that constitutes the tax. (Chamley and Honohan, 1990).

The reserve requirements tax is the one that attracts our attention in this study since its effects directly devolves on the deposit rates that banks can pay and thus their ability to mobilise savings. Reserve requirements also absorb resources that would otherwise be lent out at a remunerative rate of interest since the monetary authorities do not pay interest rates on the reserves of banks they hold. Reserve requirements could be set in the form of specified percentages of deposits (demand and time and savings deposit) of banks to be kept with the Central Bank. Alternatively, banks, insurance companies and other financial institutions could be asked to invest part of their funds in low-yielding government securities. Often times both approaches are used. Most of the time, the designated reserves carry low interest rate; a time,

zero. By altering the supply of reserve assets, the monetary authorities can achieve a change in the monetary aggregate (credit or deposit) to which the required ratio is expressed. The difference between the market interest rate on short term securities and the interest rate paid (if any) on the designated reserves represents a tax (Chamley and Honohan, 1990).

5(ii) Reserve requirements and bank deposit interest rates: A theoretical framework

The direct effect of high reserve requirements on the interest rate paid on deposits by banks as well as the spread between lending and borrowing rates has been demonstrated by Kapur (1976), Mathieson (1980) and McKinnon (1981). In a simplified version of the model, it is assumed that banking costs are zero. If no interest is paid on bank reserves, the relationship between the nominal deposit and loan rate is given as

$$d = q.L \dots \dots \dots (6)$$

where d is nominal deposit rate, L is the nominal loan rate and q is the ratio of bank credit to money. It follows from (6) that $(1-q)$ is the required reserve ratio. If banks hold a volume of loans equal to the total volume of deposits i.e. $q = 1$, the deposit rate d will be equal to the loan rate L . Suppose in this simple case, a 25 per cent required reserve ratio $(1 - q)$ is imposed. With a 15 per cent loan rate, the deposit rate d will be 11.25 per cent. Without the required reserve the deposit rate will be equal to the loan rate i.e. 15 per cent. In this hypothetical situation provided deposit demand is sensitive to interest rate changes, the volume of deposits will decline; the volume of loans will decline even more since the smaller volume of deposits now has to be spread between both loans and reserves (Fry, 1988). By reducing the required reserve ratio, the deposit rate that can be offered given a particular loan rate will rise and growth will be enhanced. This analysis can be put into better perspective when it is realised that in most developing countries, ceilings are placed on loan rates. Increasing required reserves in the circumstance will lead to a further fall in deposit rates thus widening the spread between loan and deposit rates.

5(iii) Measuring the required reserves tax

Here we have adopted the methodological framework in Chamley and Honahan (1990). The first step in measuring the required reserves tax is to identify an equilibrium market clearing nominal interest rate. The expected rate of inflation should serve as a guide in establishing this rate since we expect that at equilibrium the market clearing interest rate should be positive, even if it is small. The actual inflation is taken as a proxy for the expected inflation and the market clearing interest rate is taken as 1 per cent higher. Thus our r^* , the market clearing interest rate is taken as 1 per cent above the actual future inflation rate except where this is lower than the actual interest rate on treasury bills in which case r^* is set equal to the actual rate. Operationally, the tax rate on reserves is taken to be the difference between the interest rate paid (often times zero) and the market clearing rate for the instrument that is reserve eligible. Thus

the tax calculation is written as:

$$\text{TRR} = (R^* - r^* \text{res}) \text{ Res} \dots\dots\dots(7)$$

where,

TRR = tax on required reserves

$r^* \text{ res}$ = interest rate paid on reserves (= 0 in our sample of countries)

R^* = market clearing interest rate

Res = total reserves

The tax is expressed as

(i) a percentage of M2

(ii) a percentage of national income (GDP)

(iii) a percentage of government revenue.

These are all summary measures to serve as indicators of the magnitude of the tax.

Table 6 summarizes the results of our analysis for eight countries in our sample.⁶ The striking feature of this result is the fact that except for Kenya, Cote d'Ivoire and Tanzania, reserve requirement tax has been exceedingly high across board. As a percentage of GDP it ranges from 0.4 per cent for Tanzania to 7.1 per cent in Zambia on the average between 1980-1988. The magnitude as a percentage of M2 is also high. It is 18.0 per cent in Nigeria, 30.2 per cent in Ghana, 19.8 per cent in Ethiopia and 25.5 per cent in Zambia for the period 1980/1988. The impact of this on the amount of resources available to the banking system is monumental. Reserve requirement tax as a percentage of Government revenue has also been quite substantial. Ghana, Nigeria, Zambia, Sierra Leone are the highest tax countries closely followed by Ethiopia and Kenya. Cote d'Ivoire and Tanzania report low figures. For comparative purposes, we have also computed the effective reserve ratio on bank deposits for a cross section of countries spanning the developed world, South-East Asia, Latin America and Africa, South of the Sahara. The result is summarised in Table 7. Whereas in the developed Countries official reserve requirements have been generally low (under 10%) the situation in Africa and Latin America is the reverse.

The first observation that we want to make from Table 6 and 7 is the close correlation between the required reserve tax and the inflation rate for our sample of countries. This is most noticeable for Nigeria, Ghana, Sierra Leone and Zambia. Ghana experienced a rate of inflation in excess of 100 per cent between 1981 and 1983, Nigeria also experienced high inflation rate between 1982 and 1984 and again between 1987 and 1988. In the case of Sierra Leone and Zambia, the increase in the price level has been consistent since 1980 although it reached an alarming proportion between 1987 and 1988. The result in Table 7 also show the situation in Latin America where inflation has been at a very high level.

6/ The countries included in this sample are those that have some financial reform as part of their general adjustment programme.

From the above analysis, it is clear that high reserve requirements are likely to lead to a fall in deposit rates paid on savings, and more importantly generate inflation and is thus likely to be a serious disincentive to financial intermediation. From Tables 1 and 6 it will be observed that periods of high reserve requirements coincide with periods of high credits to the government sector as against private sector lending. Thus high reserve requirements may tend to crowd out private sector investment.

5(iv) Interest rate reforms and inflation

The second part of our analysis in this sub-section deals with the relationship between high deposit interest rates and inflation. Most adjustment programmes formulated by the IMF/World Bank often contain a clause on financial liberalisation which has at its core the removal of ceilings on both deposit and lending rates. However, in most of these countries interest rates are deliberately kept low since it is believed that raising them would add to inflation. This argument is based on two grounds. First, in most of these countries interest payments are included in price indices used to measure inflation so when interest rate rises, it impacts on the index. Secondly, interest payments are viewed as part of the cost of production and raising them would add to inflation through an increase in producer prices. The inability to accurately establish the direction of causation between inflation and interest rates has been identified as the major defect in this argument [Luckett, (1974), Adams (1984), Ikhide (1990)]. It is true that when interest rates are not controlled, increased expectations of inflation lead to higher interest rates. Thus, the line of causation is from inflation to interest rates and not the reverse. The reason why high interest rates is often associated with inflation is that the two often occur together. But that two events occur together does not necessarily establish a line of causation.

Nevertheless, however, one fact that has remained incontestable is the observation that periods of interest rate reforms tend to coincide with periods of high inflation in most of the countries implementing the orthodox adjustment programme. Most adjusting countries have raised nominal interest rates in line with the expected inflation rate in a bid to encourage savings. Coming at a time when these countries are embarking on stabilisation programmes such as devaluation of their currencies, and reduction in domestic credit expansion the result has been an upward movement in the level of prices. Efforts to fix the level of domestic interest rates to take cognisance of the increasing level of prices have resulted in levels of domestic interest rates that are often outrageous.

For instance in Sierra Leone, nominal lending rates have increased from 17.0 per cent in 1985 to 55.0 per cent in 1991 in the wake of interest rate liberalisation. Inflation rate as at December 1990 was 55 per cent. The situation is not any different in Nigeria and Zambia. Bank interest rates were deregulated in Nigeria in 1987. Nominal deposit rates moved from 9.5 per cent in December 1987 to 17.4 per cent in December 1990. Lending rates on first class advances moved from 19.0 per cent to 25.6 per cent within the same period. Inflation soared from 11.3 per cent in 1987 to 50.4 in December 1989. For Zambia, nominal deposit rates

moved from 15.3 per cent in 1985 and after peaking at 17.7 per cent in 1986, it plummeted to 11.4 per cent in 1988 and thereafter rose to 26.53 per cent in 1990. Lending rates also rose within the same period from 18.6 per cent in 1985 to 38.3 per cent in 1990. The inflation rates fell from 34.1 per cent in 1985 to 30.1 per cent in 1987 and thereafter rose to a high level of 62.4 per cent in 1990 documenting the path traced out by the nominal interest rate. The tendency has therefore been to ascribe the inflation to the high cost of borrowing since it is argued that in most of these countries, most firms depend on the banks for the acquisition of funds for working capital purposes. Moreover it is argued that the high cost of borrowing may fuel inflation by encouraging investment in speculative rather than productive activities. Although, economic theory does not establish a causative role to interest rates in inflation fears have been raised as to whether, it is proper to embark on interest rate reforms during a stabilisation programme. Thus an issue that has remained high on the agenda of implementors of policy packages in most developing countries is the role of deposit interest rates in fuelling or dampening inflation. In this section, we intend to provide some empirical evidence along this line.

5(v) Interest rate and inflation: A theoretical framework

The cost-push notion of inflation has received some attention in the literature and directly impacts on the use of high interest rates as a stabilisation tool. McKinnon (1973) and Shaw (1973) provided the original argument that high and flexible interest rates will dampen rather than fuel inflation. McKinnon in particular emphasised the fact that stabilisation policies which emphasise high nominal interest rates as against reduced monetary expansion can help to bring about rapid rate of reduction in inflation without necessarily leading to a fall in output. It is assumed that firms in developing countries depend considerably on commercial bank credit to finance working capital. A reduction in the rate of monetary expansion will impact directly on the ability of banks to grant credit to productive enterprises and enforce an immediate and most often large reduction in real output and also employment. On the other hand, the excess supply of money which often times is the main cause of inflation can be removed by using high interest rates to stimulate the demand for money. In the expanded version of the analysis by Kapur (1976), desired money balances are assumed to be a function of real income and the expected real return on holding money, defined as the difference between nominal deposit interest rate and the expected inflation. An essential feature of this analysis is the assumption that bank deposits are the only interest-bearing asset in the portfolio of households. An increase in the nominal deposit rate will lead to an instantaneous increase in the demand for money which (given that there are no actual changes in the money supply) will cause a fall in the rate of monetary growth and thus reduce inflation. The beauty in this formulation is that the increase in the demand for money as a result of the expected real return on money balances will increase the supply of credit by commercial banks and this increased bank lending will lead to increased output. Thus, this approach makes it possible to reduce inflation without necessarily reducing output. Within the context of our discussion, what this approach actually says is that an increase in real deposit rates rather than being inflationary is an anti-inflationary device. Van Wijnbergen's (1982) has offered the most forceful criticism of the McKinnon-Kapur analysis.

He points out that

"the favourable consequences of higher deposit rates in their model derive mainly from the assumption that higher deposit holdings (and consequently increased bank lending) arise entirely as a result of substitution away from cash which is unproductive into time and savings deposits which can be used to promote higher activity levels" (Van Wijnbergen 1982, p. 142).

Van Wijnbergen quarrels with the specification of portfolio choice (cash and time deposits) in the McKinnon-Kapur model which he feels should include curb market loans. He noted that a significant part of the financing needs of investors in developing countries is met by operators in the curb market since the formal financial sector cannot meet with the demand for investible funds in this sector. This he attributes to the administrative fixing of interest rates on time deposits which makes it impossible for financial institutions to attract deposits and the requirements by the monetary authorities for banks to hold part of their deposits as required reserves, which further curtails the availability of funds for lending purposes. A policy induced increase in deposit rates would have two possible outcomes given this portfolio choice. The first is the McKinnon-Kapur outcome, i.e. substitution from idle cash into time deposits and the result is unambiguous. However, the second outcome which he claims is more plausible is that the substitution is from curb markets loans into time deposits. The expansion of formal banking sector credit that follows is more than offset by a reduction in curb market loans because of the reserve requirements imposed on banks (but not on curb markets). The net reduction in total credit forces up curb market interest rates and reduces the aggregate level of output. Where banks are not as effective in intermediating savings as unofficial markets and/or where there are official limits to the amount of loans that banks can give out, this effect will be more emphasised. When the short-run supply side effects of the curtailment of credit through reduction in working capital outpace the short-run demand-side effects on output, inflation is bound to rise in contradistinction to the results obtained by Kapur (Roe, 1989).

Two interrelated but crucial issues stand out from the foregoing analysis. First is the nature of the portfolio choice set and the second has to do with the importance of the unorganised credit market. If the unorganised credit market is domineering, and the choice of portfolio spans cash, bank deposits and informal sector loans, the Wijnbergen analysis may hold sway and the result of interest rate reforms may be higher inflation. Millard Long (1992) has classified informal financial markets into Kurb (curb) markets which serve larger borrowers and informal lenders which serve the non-corporate sector. Curb markets are informal commercial bill markets and until very recently, their scope of operation is limited in most African countries. In Nigeria for instance there are now about 41 such organisations operating nominally as investment and finance companies (but actually as outlets for laundering foreign exchange) the number having benefitted immensely from the liberalisation of the foreign exchange market

in 1987⁷. To conclude that they exist mainly 'to circumvent government controls on interest rates and credit allocation' is to emphasise the obvious (Long, 1992, p.64). No doubt informal financial institutions (pawnbrokers, ROSCAS, moneylenders) play a very prominent role in the non-corporate sector in most developing countries. The virtual non-existence of Curb markets in most developing African countries and the characteristics of the clientele served by the informal financial institutions raises a lot of doubts about the effectiveness of the Van Wijnbergen analysis for this group of countries. On the other hand, the McKinnon-Kapur analysis rests on the nature and magnitude of the interest-elasticity of the demand for money (broadly defined) in developing countries since it presumes that an increase in the deposit rate of interest will lead to an increased desire to save in financial form. The evidence we have provided in Part 4 will tend to support the existence of a positive interest elasticity for savings and time deposits in most of the countries in our sample. In the following sub-section, we provide some evidence on the relationship between high deposit rates and inflation in some adjusting countries.

5(vi) Testing the inflation-interest rate relationship

The simple model tested in this section is meant to capture our discussions on the main effects and channels relevant in the explanation of the inflationary process in most adjusting countries and to highlight the need for proper sequencing in an adjustment process. Inflation is explained in terms of four variables only-these are the real rate of interest, the change in money supply being a proxy for government deficits, the real exchange rate and a variable for the level of output.

The McKinnon-Kapur analysis presented earlier forms the basis for the test here. It is expected that high real deposit rates by increasing the demand for money broadly defined will increase the size of deposits in banks and thus enlarge bank lending. This in itself will lead to an increase in the level of investment and enlarge output thus reducing inflation. Moreover by increasing the amount of investible funds that is channelled through the banking system only optimal and highly productive investment will be undertaken thus further increasing the level of output. If this relationship holds, we should expect a negative relationship between real interest rates and the rate of inflation (Fry, 1988).

Government deficits financed by borrowing from the domestic financial system tend to be inflationary. This has been established in a number of studies (see for instance Aghevli & Khan, 1978). The total supply of money, using the money multiplier approach is related to the stock of high-powered money (H) through the money multiplier (m): Thus $M_1 = mH$. (8) where M is the total money supply, (m) is the money multiplier and H is the stock of high-

⁷A full list is given in the 1990/91 edition of the Nigerian Banking, Finance and Commerce published by REDASEL (pp. 435-441). Records here show that over 80% of them came into existence between 1988 and 1991.

powered money. In the short-run, the factors that affect the multiplier m do not vary considerably, thus leaving H to determine changes in M_1 . Changes in M_1 can occur through changes in international reserves or net foreign assets, changes in the central Bank's claims on the government and changes in the central banks claims on commercial banks and the private sector. Changes in the central bank claims on the government are mostly a reflection of the government deficit. An increase in the deficit will lead to an equal change in the stock of high powered money. This analysis will hold when government deficits are financed by borrowing from the central bank or from the commercial banks with the latter replenishing reserves by recourse to the central banks, which is a valid assumption in the context of developing countries. Thus in this study we have made money supply a proxy for government deficits. One other reason for making money supply our proxy for government deficits is that it is more likely to reflect the actual size of the deficits than the published figures in government accounts which in most cases are budget estimates. They do not reflect the sizable "unprogrammed expenditures" of government during the course of the fiscal year in most developing countries which are often financed by printing money. Thus we expect that for our analysis, an increase in the size of the deficit should lead to a change in the money supply and hence inflation.

Exchange rate is included as an explanatory variable in our model because of its prominence in the stabilisation agenda of most developing countries. Prior to the adjustment programme most of their exchange rates were "over-valued" and as a first step to correcting the imbalance in the external sector, most of them were forced to devalue. Despite several debates on this issue, the consensus of opinion is that at least in the short-run devaluation will lead to a rise in domestic prices. Devaluation will lead to a rise in the price of tradables and consequently non-tradables. The ensuing rise in the cost of living index either as a result of the weighted average of the proportionate devaluation or the response of factor incomes to prices will have the aggregate effect of further promoting inflation especially when inflation already exists before the devaluation. The stronger the tradable sector in total expenditure as is more often the case in most developing countries, the more serious will be the expectation of accelerating inflation and hence the inflationary spiral that emanates. Finally, we include a variable (per capita real income) to measure the rate of growth of economic activity.

Thus the form of the equation tested is:

$$P_t = f(d-II^*, PCRY_t, RECHR_t, MS_t) \dots (9)$$

Where,

P_t = is the inflation rate computed as the rate of change in consumer price index (CPI) at end of year

$d-II^*$ = is the real deposit interest rate

$PCRY$ = per capita real income

$RECHR$ = is the real exchange rate and

MS_t = is the annual changes in money supply

with $f'd-II^e < 0$, $f'PcRY < 0$, $f'RECHR > 0$, $f'MS > 0$.

Data and estimation

Two measures of inflation are used for our estimation. The first is the rate of change in the consumer price index, (CPI). The other measure is a proxy for the actual inflation rate; the gross domestic price deflator (GDPD). The major criticism in estimating equation (9) has been directed at the use of the CPI measured inflation rate as a dependent variable when real interest rate defined as nominal deposit rate minus the expected rate of inflation is an explanatory variable. This argument is not very valid because our dependent variable is actual inflation and not expected inflation (II^e). Also, on a trial run of actual inflation on the real deposit rate only, our results did not show the existence of serial correlation. However, in order to establish the validity of our results we decided to replace the rate of inflation with the GDP deflator, in alternate regression. Per capita real income, real exchange rate, and money supply are all in log-linear form. The equation was estimated for the period 1975-1990 for all countries using the OLS method of estimation. Our sample of countries are those that have embarked on financial liberalisation with interest rate reform as a core policy instrument.

Results

Our results are tabulated in Table 8. For all countries the real interest rate variable came out with a negative sign and is significant at less than 5 per cent level for the equations estimated with the rate of inflation as the dependent variable. The per capita real income variable also came out with the right sign (negative) in all countries and is significant at the 5 per cent level in Ghana, Kenya, Tanzania, Sierra Leone and Zambia and at the 10 per cent level in Nigeria. Although the real exchange rate variable is significant at less than 5 per cent level in all countries, it came out with a negative sign in Kenya and Sierra Leone. The money supply growth variable is positive and statistically significant at less than 5 per cent level in Kenya, Nigeria, Tanzania and Zambia. It is neither rightly signed nor significant in Ghana and Sierra Leone. The results of the estimates using GDP deflator as the dependent variable is not significantly different. Again the real interest rate variable came out with a negative sign and is significant at less than 5 per cent level in Ghana, Kenya and Zambia. Per capita real income is significantly different from zero in all countries and is rightly signed. The real exchange rate variable is now positively signed in all countries except Sierra Leone. However, it is significant only in Ghana, and Sierra Leone. Again the money supply variable is positively signed in all countries except Ghana³. The overall performance of the two sets of regressions judging by the

³The result in Ghana has received attention in an earlier paper where it was argued that given the drastic reduction in government deficit in that country between 1983 and 1989, monetary growth may

R_2 and F-statistic is quite encouraging. In our first set of regressions, the explanatory variables explained well over 90 per cent of the dependent variable in Ghana, Nigeria, Tanzania, Sierra Leone and Zambia. In Kenya, it explained about 48 per cent. In the second set of regressions, they explained between 65-85 per cent of the changes in the inflation rate in Ghana, Tanzania, Sierra Leone and Zambia. The occurrence of a positively signed constant term in almost all countries is indicative of a positive trend inflation during the period under observation.

We have attempted to rank our variables according to the relative strengths of the explanatory variables by using the Beta-coefficients. The results are summarized in Table 9. From this table, it is obvious that situations differed across countries. For Nigeria, Tanzania, Zambia and Ghana, the depreciation of the domestic currency has been the most important contributory factor to inflation. This finding corroborates the work of London (1989) where he concluded that "the dominant factors affecting the course of inflation in Africa have been inflationary expectations and most importantly, changes in the external value of local currencies" (London, 1989, p. 107). The exchange rate variable is closely followed by the rate of change of the money supply. This variable is ranked most important in Kenya, and second in Nigeria, Tanzania and Zambia. This finding is, however, in contrast with the findings of London that "monetary factors have played a much less important role" (op.cit., p. 107). The ability of the real interest variable to dampen inflation is reflected in the strengths of the computed B-coefficients.

VI. [†] Policy analysis

Our policy analysis will be conducted in two parts. First we provide empirical evidence on the response of financial savings to real interest rates in a group of countries that have either liberalized nominal interest rates or reduced inflation considerably in an attempt to achieve positive real interest rates. The first category includes Nigeria, Ghana, Sierra Leone, Zambia, Tanzania and Kenya while in the second group we have Burundi, Cameroon, Cote d'Ivoire, and Rwanda. The policy deductions we are able to make from the model tested will depend to a great extent on the validity of the model itself. Thus in the second part, we perform some historical simulation and using simple simulation error statistics we establish the validity of our model. This is complemented by some impact multiplier analysis. The financial deepening model (eq. 1) tested in part 4 forms the basis of our policy analysis in this section.

not be very relevant in explaining inflation. See Ikhide (1992): "Financial liberalization and inflation: Is there a link in adjusting developing countries?" Revista Internacional (forthcoming). International Review of Economics and Business, (Milano)

6(i) Testing for structural shifts

Two types of tests - the dummy variable and Chow tests - are employed to establish the existence of a structural shift after policy adjustment. Attempts at liberalising interest rates started in Nigeria in 1987, Ghana in 1984, Sierra Leone 1985, Zambia 1985, Tanzania 1985, and Kenya first made a conscious attempt at streamlining nominal deposit rates with the inflation rate in 1983. Burundi, Cameroon, Cote d'Ivoire and Rwanda have successfully reduced the inflation rate since 1984 making it possible for them to achieve positive real interest rates.

An interactive slope - dummy term (DUMRINT) is constructed for the real interest rate variable by multiplying the Dummy variable (DV) into the real interest rate where DV is constructed as follows

$$\begin{aligned} DV &= 1 \text{ for period of high nominal interest rates or positive real rates} \\ &= 0 \text{ for period of low interest rates or negative real rates.} \end{aligned}$$

Thus in our regression equations for these countries we replaced $(d-\pi^e)$ by DUMRINT. All other variables remain as previously defined. Our results are summarized in Table 12. The equations were estimated using quarterly series for 1981-1990 where possible. Our results indicate that the interactive dummy variable is significant at less than 5% level in all countries except Tanzania and Cote d'Ivoire; in Tanzania, it is significant at 10% and in Cote d'Ivoire it is not significant though it has the right sign.

The Chow test is used in most econometric work to test for structural shifts in a model especially where the series spans two distinct periods as in our own case. The data set is divided into two sub - periods to coincide with the periods before and after the change in policy stance. Two separate functions are estimated for the sub-periods. The two regressions over the sub-periods are then compared to the full - sample regression using an F-ratio to assess whether a significant shift has occurred in the function⁹. The calculated F-ratio, F_c , is compared with the theoretical value of F , F_t , obtained from the F- tables. The hypothesis tested is:

$$\begin{aligned} H_0: F^c &= F^t \\ H_1: F^c &\neq F^t \end{aligned}$$

If $F_c > F_t$ we reject the null hypothesis, we accept that the structural equations are unstable due to the occurrence of a structural shift. The results are tabulated in Table 11. Our results show the occurrence of a structural shift in all the countries in the first category except Zambia. However for the second group of countries, the calculated F is lower than the tabulated F .

Another interesting way of testing for structural stability is by simply comparing the coefficients of the exogenous variables for the two sample periods to see what significant changes

⁹ For details of this test see Pindyck and Rubinfeld (op. cit) pp 123-125.

have occurred between the two periods. These results are again summarized in Table 12. These results are far more illuminating. Apart from Cote d'Ivoire, the results show that the after policy change estimates (a) are more respectable than the before policy change regressions (b). In particular, the real interest rate variable is now significant at the 1 % level in Ghana, Nigeria and Zambia, for the after policy change estimates. The real interest rate variable is not significant at all in Burundi, Cameroon, Rwanda, Tanzania for the before policy change estimates, but the after policy change regressions are significant at 5 % in Burundi, Cameroon and Rwanda and at 10 % in Tanzania. From the evidence provided in this section one can tentatively conclude that a policy of real interest rates will help to enhance financial deepening.

6(ii) Simulation

We attempted a historical simulation of the endogenous variable (change in money supply) for the period covered by our model. The reason for this is not far-fetched. It is possible for a model to come out with good statistical tests (R^2 , F , t etc) and yet be unable to replicate the actual series. Such a model might not be very useful for historical policy analysis which is very important in our situation in this chapter. In addition, the validity of a model depends to a great extent on the ability of the model to track actual series. A number of simulation error statistics are available for assessing the performance of a model¹⁰. Here we have limited ourselves to four of such measures - root mean square error (RMSE), the root mean percentage square error (RMSPE), the mean error and the mean % error. The RMSE is a measure of the deviation of the simulated variable from its actual time path. The magnitude of the error is evaluated by comparing it with the average size of the variable in question. The RMSPE is the RMSE expressed as a percentage. Our results are tabulated in Table 13. From this table, it can be inferred that our model in almost all the countries have a good simulation fit. Our RMSE range from 0.022 in Ethiopia to 0.21 in Ghana. When compared to the average value of the exogenous variable, (change in money supply broadly defined), these values are relatively low. The RMSPE is fairly large in Burundi (34.5), Ghana (35.1) and Kenya (23.7). For the other countries it ranges from 0.97 for Cote d'Ivoire to 6.2% for Sierra Leone. We have also plotted the actual values of our dependent variables against the simulated series to find out how well our model simulates turning points in the historical series. For lack of space, we only show four of these plots in figures 6(i) to 6(iv). The fits are generally impressive further attesting to the adequacy of the model. Based on these results, one can go ahead to use our model for some policy analysis.

In table 14 we report the computed direct and total effects of two of our exogenous variables, real interest rate and real income on financial deepening. The estimated coefficients we reported in Part 4 (Table 3) and which has formed the basis of our discussions so far measure the direct effects of these two variables on financial deepening. In order to measure the

¹⁰ For details of this statistics see Pindyck and Rubinfeld (op cit) pp 362-364

total effect (ie. the direct and indirect effects), we compute the impact multipliers¹¹. Actually, what we have done is to compute the "elasticity multipliers at the means" as this will be more useful for meaningful deductions. Our results show that the total effects of real interest rate changes outstrip the direct effects in all countries except Burundi, Tanzania and Zambia. The total effects of real interest rate changes is strong in Cameroon, Ghana, and Nigeria. In these countries, a 1% increase in real interest rate will lead to close to 0.4 % increase in financial depth. It is also noteworthy that the direct and total effects are predominantly positive which tend to corroborate our evidence on the existence of a positive relationship between real interest rate and financial deepening. Our results also show that the total effects of the interest rate variable outweighs the total effect of the real income variable in all countries except Cote d'Ivoire and Zambia. This might sound a little bit strange especially in the light of evidences from current literature on the importance of income as a major determinant of savings in developing countries. Such deductions are often based on observations of the direct effects only. In our sample of countries, the direct effect of real income changes are higher than the total in 8 out of the 11 countries. If we base our conclusions on the role of real interest rates in financial deepening on the direct elasticities only, this may lead us to underplay its impact as the reported elasticities are generally low in all countries.

The final part of our simulation involved some experiments based on the experience of two countries which actually reflect the trend in all the countries in our sample. The first group of countries is represented by Cote d'Ivoire. In this group, inflation rate have either remained static or declined. In the case of Cote d'Ivoire, nominal deposit rates have generally declined in response to the decline in the inflation rate. The second group of countries is represented by Nigeria where there has been an increase in nominal deposit rates as part of the adjustment package but inflation rate has also been on the increase. This experience is replicated in Sierra Leone, Zambia, Ghana, Kenya and Tanzania.

Four scenarios are painted. In the first experiment we allow nominal deposit rates to rise at their historical (1980-1985) levels in Cote d'Ivoire (ie. 1.1% per quarter) for the period 1986 to 1990 while inflation rate is kept as in historical data. In the second scenario we allow nominal deposit rates to grow at their (1980-1986) historical level in Nigeria (i.e. 2.1 % per quarter) and allow inflation rate also to rise at their historical level (2.5%) for the period 1987-1990. This allows us to control for the increase in nominal deposit rates and rapid inflation after the commencement of the adjustment programme. In the third scenario we allow deposit rates to rise at their historical level and inflation rate to fall at 2.5 % Per quarter. The last scenario involves a reduction of the inflation rate by 2.5 % for the whole period (1980.I to 1990.IV) while keeping nominal deposit rates at their 1980 level throughout the estimation period.

The basis for this experiment is rooted in the modes of attaining real positive interest rates: by manipulating the nominal deposit rates only, by controlling inflation alone and a policy

¹¹ For details of the methodology see Intrigilator M.D. *Econometric models, Techniques and Applications*, Prentice Hall, Inc. Englewood/Cliffs, 1978, p. 72.

which combines the two. We expect that the experiments above should be able to shed some light on these controversies. In each experiment we generate a forecast of the dependent variable and then compare this to its historical value. The results are summarized in Table 15.

From the tabulated results, experiment 1 in Cote d'Ivoire results in a distinct performance over the actual forecast. In the case of Nigeria, the best result emanates from experiment 3, where we allowed deposit rates to rise at their pre-adjustment rates but at the same time reduced expected inflation by 2.5% per quarter. The worst result is in experiment 4 where deposit rates are static, but inflation rates fall at the rate of 2.5% per quarter. One must also point out here that the present policy whereby high nominal deposit rates are accompanied by high inflation rate does not yield the optimum results. As a matter of fact what is observable is a decline in the change in the dependent variable. Experiment 2 where nominal deposit rates are allowed to rise gradually while inflation rate, though not reduced is also allowed to rise gradually, also yields an increase in the dependent variable. The reported changes might look minuscule but it should be borne in mind that the variable of interest (change in real money) is expressed in logarithmic forms. The plots for the four experiments are shown in figures 6(v) to 6(viii).

VII. Policy Implications of findings

This work dealt with the mobilization of financial savings through financial deepening. The thesis on the improvement in output (and economic welfare) through a transformation of tangible (physical) assets to more productive form which is easily attainable through the development of financial assets has been exhaustively discussed in the literature (Patrick, 1966, Gurley and Shaw, 1967). The contention is that a considerable portion of physical wealth in underdeveloped countries is held in forms unproductive of sustained growth - precious metals, excess holdings of inventories of foodstuffs and other primary products, livestock and land. A reallocation of a fraction of this excess holdings would meaningfully impact on the GNP. The availability of suitable financial instruments could be of immense importance in the transformation process. The efficiency with which banks are able to undertake this transformation is conditioned by a number of factors. For instance, it may imply that the expansion of bank credit is synonymous with expansion of real sector activities and domestic output. In other words, the expansion of bank loans would imply an expansion of production activities particularly where adequate regulations and supervision (e.g. through sectoral credit allocation) ensures that credit is channelled to priority sectors of the economy.

We have provided evidence to the effect that the banking sector through the use of adequate incentives, in particular high nominal interest rates on deposits, can help to mobilize financial savings and thus enhance financial deepening. Using quarterly data, for a sample of 17 countries (for the period 1980-1990) we found that the real interest variable came out positive and significant in 12. (The variable came out with a positive sign in all but 2 countries, Mauritius and Swaziland). To support the fact that positive real interest rates will enhance the availability of credit and hence foster the supply of credit to the private sector we tested the

credit availability hypothesis using quarterly data after establishing a correlation between financial deepening and financialisation of savings. Our real interest rate variable came out positive and significant in 13 countries and positive in all countries except two. From this body of evidence, one can conclude on the average that even if the effects of real interest rates on aggregate savings are weak, its impacts on financial savings are relatively strong. In other words, real interest rates can be helpful in changing the composition of savings in favour of financial assets and to the extent that "financial flows are a necessary ingredient of economic growth" (Gupta, 1984 p. 132), it follows that a policy of high deposit rates can help to accelerate economic growth by channelling an increased proportion of savings, into relatively more productive use.

The issue of viable alternative assets in which the rural farmer could keep his wealth is a major problem in the context of developing Africa. Most farmers would rather keep their wealth in the form of large herds of cattle which in addition to being a symbol of social standing in the society, commands a higher rate of return than similar investments in financial assets in commercial banks. In Swaziland for instance, an estimated 24% per annum return on homestead herd is expected by the cattle farmer as against the low return of 10% on savings deposit in banks. Thus, in Zambia, the Ila cattle rearer sees his cattle as his bank. All his savings is denominated in cattle and its value will rise (either through birth of new calves or through the pronounced appreciation in the prices of cattle) as long as it stays there (Bates, 1990). If farmers are to substitute real for financial assets, what is called for is a revision of the existing interest rate structure to make them compete with the farmers perceived returns on real assets.

One aspect of financial deepening which did not receive explicit attention in this is the role of bank branching in enhancing financial deepening. Elsewhere we have provided evidence on the important role of branch banking in the savings mobilisation process¹². A reduction in the population per branch increases financial savings by helping to mobilise idle cash balances circulating outside the banking system. Banking infrastructure is still grossly underdeveloped in most of Africa. For instance, one bank office still caters for about 250,000 people in Uganda, 67,000 in Kenya, 76,923 in Benin and 60,000 people in Nigeria. Slightly related to this is the lopsided nature of the distribution of the available bank offices. Most of the bank offices are located in the urban areas. In Nigeria, for example, about 60% of bank branch network is located in urban centres. The population per bank branch is about 24,960 for the urban areas and 138,200 for the rural areas. The situation is worse in Tanzania where about 61,451 and 198,030 persons share one bank in the urban and rural areas respectively. The belief that rural households have no savings has been challenged by a number of works. According to Vogel (1984):

¹²From a pooled study of five countries: Ghana, Kenya, Ethiopia, Tanzania and Nigeria we provided evidence to the effect that a 10% point reduction in the population per bank branch will lead to close to 7.7% increase in aggregate domestic savings. See Ikhide (1992): The mobilisation of private savings in Africa: Case study of the role of banking system in Sub-Saharan Africa. ECA, 1992.

"the rural poor would have been extinct long ago with the onset of the first emergency, and small farmers would have starved while waiting for the next harvest if they failed to save some of the previous harvest. The rural poor, more than anyone else, must have a liquid reserve to meet emergencies"

Echoing this same opinion, Adedjei (1980) aptly summarised the situation by saying:

"In spite of the low income money earnings of the bulk of our people, it is surprising how much of the money incomes flow from the rural to the urban areas to finance housing, construction, and consumption" (Adedjei, 1980)

So what is lacking in most cases is the provision of adequate incentives and alternative ways of mobilising the surplus resources in rural areas. In Ethiopia for instance, when old bank notes were redeemed for new ones in 1976, nearly 100 million Ethiopian Birr was recorded in rural settlements where there were no commercial banks. The value of old notes redeemed in rural villages as a percentage of total bank deposits was about 107.3% for the 12 administrative regions (Abebe, 1992, p. 163). Accessibility of the rural population to the banks will aid the formation of the banking habit and encourage savings thus enhancing financial deepening.

Moreover, an extension of the branches of banks to the rural areas could serve as a solution to the problem of integrating the rural financial market to the formal national financial grid. Informal financial arrangements are predominant in the economies of most African countries. Despite the popularity of informal financial arrangements at providing financial services, they do not meet all the needs of the rural sector. For instance, such arrangements do not allow for the collection of savings from more than a small group of individuals well known to one another and they do not move funds over long distances (World Development Report, 1989, p. 116). The higher costs of administration of loans (due mainly to credit risks) may lead to the charging of high interest rates. Also, such arrangements rarely provide term finance except in a few cases such as housing finance. Most importantly, informal financial arrangements lead to the segmentation of rural markets from national markets with its attendant limitation on the supply of credit and monetary control by the monetary authorities. It is argued that an arrangement that links the activities of rural financial institutions to the national financial grid will help to overcome some of these shortcomings. This could be effected through an extension of bank branches to the rural areas. In this regard, the activities of the 'tontines' in Cameroon comes readily to mind. Almost 50% of the population are involved in these 'tontines' whereas less than 15% have access to the bank. The tontines channel funds collected from their customers to the banks. This encourages customers to accelerate the movements of their bank accounts since it opens up an avenue to bank credit. Through the tontines, many rural dwellers are thus able to acquire the initial amount necessary to open a bank account in the local branch (Nzemen, 1989); which in most cases is far more than the annual savings of an average wage-earner. The newly established community banks in Nigeria are also conceived along this line. The banks are supposed to operate as a single-unit office bank with their future tied to the economic fortunes of the communities in which they are located. These banks are supposed to be the sole prerogatives of the communities they serve. In this way, the banks are expected to

carry along the communities they serve. This will help to contribute to the overall growth of the banking system and the economy.

In spite of these apparent usefulness of a policy of bank branching in the achievement of financial deepening, some caveats are in order here. Caution must be exercised over unnecessary proliferation of bank branches. There is more to it than opening banks in rural areas. They have to offer credit facilities to the people there so as to make their savings more useful. Steps should be taken to ensure that rural banks do not just exist to help transfer resources from the rural to the urban centres.. Of the total funds mobilised by the branches of rural banks in Nigeria between 1985 and 1989, only an average of 46.7 per cent was invested in the rural areas (CBN Annual Reports, 1986-1989). The necessity for investing mobilised funds in areas where they originate cannot be overemphasized. Apart from helping to facilitate the development effort of the regions, there is the additional fact that drawing funds from savings made by members of the community enhances the willingness of borrowers to repay their loans (Daguefe, 1985). Moreover, the multiplication of bank offices will also impose extra demands on the available skilled personnel. The lack of experienced staff could lead to poor internal controls, frauds and loan procedures, thus endangering the affected institution (Snoek, 1989).

In addition to the above, it is evident in most parts of Africa that the forms in which people keep their savings is influenced more by social consideration than economic gains such as offers of lucrative interest rates. Safe custody, liquidity and enhanced social prestige may be very crucial in a programme of transition from traditional forms of savings to bank deposits (Alberici, 1973). This underlines the need for adequate banking services the basis of which should be convenience and guaranteed accessibility to deposited funds, the alternative to which may be keeping money in holes dug in the ground, the rafters of a house, a tin can, a mattress, , tree trunk , well or wall (Von Pischke, 1983, p. 53). Rural people are wont to avoid financial assets because of inconveniences such as distance, shoddy services, long hours of waiting etc. that are characteristics of banks in most developing countries. Instead, they will rather keep wealth, as has been found out for Ghana, in liquid real assets such as bags of maize, and illiquid forms such as unfinished buildings instead of liquidating these assets in return for financial assets. This implies a huge social loss to the economy of the country (Bentil et.al., 1988). It is not also uncommon to find banks developing an apathy towards expansion of branches to rural areas because of the apparent unprofitability of these branches. The rural banking programme in Nigeria ran into this hitch after the first two phases. Coupled with the poor conditions of the infrastructural facilities in these areas, a lot of persuasion and muscle-flexing by the monetary authorities is often required to make the process continue. The morale of all these is that, in addition to the provision of adequate infrastructural facilities such as good roads, adequate security , electricity and water supply in rural areas which may serve as attractions for urban bank workers, " a fundamental re-orientation in the minds and behaviour of rural bank managers" (Abebe, 1992) is of paramount importance if the savings potential of rural dwellers is to be exploited. In particular, adequate educational campaigns need to be embarked upon on the role of financial institutions in the developmental process.

Having provided positive evidence on the use of high nominal interest rates to mobilize financial savings we then addressed two stabilization issues. There is no doubt on the necessity for the use of reserve requirements for the purpose of prudential regulation. As a matter of fact, for successful interest rate liberalization, effective bank supervision and regulation is indispensable. As will be shown shortly, one of the reasons why most interest rate liberalization efforts have resulted in explosive and uncontrollable interest rate increases is the inability of regulatory authorities to design and enforce strict requirements with regards to the levels of bank capital (in relation to risk assets) and provisions for loan losses, a situation that has encouraged unsound banking practices. Where this is complemented by the establishment of deposit insurance schemes that 'buys over' bank losses at little or no cost, the result has been an irresponsible interest rate policy by banks since in the end, the government would always bail them out. This is more relevant in situations where the government has interests in such banks. In most African countries, the government is a major shareholder in the few commercial Banks operating in the economy. The requirement for effective prudential regulation in order to ensure the stability of the financial system which entails strict compliance with reserve requirements cannot thus be overemphasized. However, a line has to be drawn between the requirements for prudential regulation and economic regulation aimed at the allocation of resources. The evidence provided in this study tends to suggest that the amount of resources withdrawn from the banking system in the form of reserves is quite enormous and cannot just be for prudential regulation purposes only thus constituting an unfair tax on the system. More important for our purpose, however, is the fact that the size of this tax has direct bearing on the interest rate that banks can pay to depositors even where interest rates are liberalized. On the credit side, it unfairly impacts on the amount of credit that the banking system can grant for productive investment purposes. It has to be stressed however, that where government uses the revenue raised from reserve requirements for direct investment or is lent to development banks for the same purpose, reserve requirements serve a useful purpose. But where it is spent on government consumption or transfer payments, the benefits from such expenditure items has to be balanced against the credit denial to the private sector. In either case, government as a borrower should be made to pay the cost of credit like any other borrower.

The role of inflation in this study is examined from two (interrelated) perspectives. The first has to do with the constraint posed by rising inflation on the attainment of positive real interest rates. This consideration occurs with regards to the adverse consequences of inflation on the holding of financial as against real assets. From the evidence provided in Appendix 2, inflation affects the holding of all classes of financial assets. So, the issue boils down to not just inflation and a narrow class of financial assets but money (in its whole gamut) and real assets. Money remains a viable medium for transferring disposable resources for investment purposes from households to other sectors of the economy and also for redistributing those resources among households (Arnoldo Mauri, 1971). Inflation by discouraging the holding of financial assets will hamper the transfer process. And if high deposit rates is found to exercise a positive effect on the inflationary process, the argument for the use of this latter variable to stimulate the holding of financial assets becomes self - defeating.

Outside nominal deposit rates, it is of crucial importance that factors that give rise to inflation be identified. Even if high real deposit rates do not give rise to inflation, the implementation of policies that have inflationary implications during a process of financial liberalisation may make it impossible to achieve positive real interest rates. This raises the serious issue of sequencing in adjustment programmes. From the evidence we have provided in this study (See Table 8); we do not find a positive relationship between real deposit rates and inflation. Our results tend to support the McKinnon-Shaw hypothesis that real deposit rates may dampen rather than fuel inflation. The preponderance of evidence in this study will tend to support the fact that rapid exchange rate depreciation, and rapid expansion of the money supply occasioned by government borrowing to finance its deficits are major variables in explaining the inflationary process in our sample of countries. It is not therefore an accident that our high inflation countries are the same countries where government deficit as a percentage of total revenue have been on the increase (Appendix 3), where reserve requirements as a percentage of money supply are of a sizable magnitude (Table 6) where domestic credit to the government far outstrip domestic credit to the private sector (Table 1) and where average growth of money supply have been on the increase (Appendix 3). These countries include Ghana, Sierra Leone, Nigeria, Tanzania, Zambia and occasionally Kenya. These are also countries that have embarked on financial liberalization as part of their adjustment programme in the latter half of the 1980s. The result has been high deposit and lending rates, the latter of which may be destabilising.

Given the rapidity with which most developing countries are embarking on IMF/ World Bank sponsored adjustment programmes, a major component of which is financial liberalization, a major debate has arisen as to what should be the appropriate sequence in the policy instruments in the package. Specifically, the issue of sequencing of stabilization cum structural policies is discussed. Smith and Spooner (1992) have identified three reasons why stabilization measures (defined here to include all demand - side policies embarked upon to bring absorption in line with output and sustainable capital inflows e.g. devaluation, credit restraint etc) should precede structural adjustment policies (supply side policies to improve output over the medium and long term e.g. financial liberalization). First, the results of supply-side measures take time to be realized and without demand restraint, the initial increase in balance of payments deficit that accompany demand side measures may become explosive and uncontrollable. Second, stabilization measures are required to bring about a substantial increase in the balance of payments. This is made possible by a drastic depreciation of the exchange rate ostensibly to promote exports in order to provide funds for the importation of essential imports. In order to sustain the exchange rate adjustment, appropriate monetary, fiscal and incomes policy have to be put in place as a pre-requisite to the expansionary supply - side policies. Thirdly, to enhance the growth of savings and hence investment, it is necessary that inflation be controlled. This third reason is the core of our present analysis. The initial short-run effect of a devaluation is clear and unambiguous. (Andrew Crockett, 1982; Porter and Ranney, 1982). It leads to an increase in domestic prices. Although the debate on the initial effects of a restrictive monetary policy remains inconclusive, the opinion of most analysts in developing countries is that since it reduces the availability of working capital funds, the end result is the curtailment of the level of output and thus a hike in prices. Restrictive fiscal policy when faithfully implemented remains

a potent instrument for reducing the level of prices. Government deficits financed by borrowing from the domestic financial system tends to be inflationary (Aghevli and Khan, 1978). From the foregoing, it is obvious that any attempt at establishing optimal real deposit rates must be preceded by an appropriate control over inflation¹³.

Finally, we looked at the appropriate combination of interest rate and inflation policies that may stimulate the growth of saving. The results of our experiments (Table 15) is very illuminating in this regard. The best policy will tend to be that which combines a reduction in inflation with a gradual but consistent increase in the deposit rate. This policy option results in a greater increase in financial savings. The deduction that can be made from this and the analysis above is that the oft emphasized policy of attaining positive real interest rates (in the immediate short -run) may be misplaced. First where such a policy is pursued simultaneously with a stabilization programme, it could lead to a hike in interest rates which could be distortionary. The case of Sierra Leone, Zambia, Ghana, and Nigeria where lending rates have climbed to alarming proportions vividly illustrates this. On the other hand, an undue emphasis on positive real interest rates might be counterproductive even in cases where inflation rates have been considerably reduced. In Cote d'Ivoire for instance, the consistent decline in inflation rate since 1985 has led the policy makers to reduce nominal deposit rates since the new orthodoxy is to set nominal rates in line with the inflation rate. Our simulation results show that if nominal rates (which in any case were not too high) had been left at their pre - 1985 growth levels even when inflation rates fell, the net effects on financial savings would have been positive. The conclusion that can be drawn from this is that savers are more likely to react more quickly to a reduction in nominal deposit rates and cut down on financial savings than they will react to a reduction in the inflation rate and increase savings. In other words, the behaviour might be suggestive of the fact that people may suffer from money illusion. What may not be realistic for the purpose of mobilizing savings is a static interest rate policy (even when inflation is falling) at least at the early stages of financial development. This is particularly more relevant in a situation where deposit rates are not too high.

¹³The favourable results from Ghana and Lesotho may be a pointer for other African countries on the need to keep an appropriate tab over the fiscal deficit as a means of controlling inflation. In Ghana, government deficit as a % of GDP fell from 2.6% in 1983 to a surplus of 0.34% in 1984. Inflation which was 143% in 1983 fell to 18% in 1991. In Lesotho, overall budget deficit was reduced from 11% of GNP in 1987/88 to 1.9% in 1990/91. Inflation which peaked at 18% in 1986 fell to 11.4% in 1990 (See Central Bank of Lesotho, Annual Reports, 190, p.23)

VIII. Summary and Conclusions

In this study we have attempted to provide empirical evidence on some of the determinants of and the relationship between financial deepening, credit availability and the efficiency of investment in a sample of selected sub-saharan African countries. The study is motivated by the need to enhance the mobilization of savings given the declining trends in external capital inflows, declining export receipts and mounting external debts in most of these countries, leading to severe constraints on resources needed for development purposes.

Apart from a review of some of the theoretical literature and the use of statistical trends to show the movements in some of the major macro variables that relate specifically to financial savings, the study consists of three analytical parts:

(i) Testing for the existence of a positive relationship between real interest rates and financial deepening, credit availability and the efficiency of investment.

(ii) Providing evidence on the possible impacts of high reserve requirements and inflation on the deposit rates that banks can charge on the savings of customers and how this can hamper the whole savings mobilization efforts.

(iii) Providing evidence on feasible policy alternatives (within the context of financial liberalization using simple simulation experiments) in the mobilization of financial savings.

Our methodology consisted mainly of the use of tables and simple co-variational statistics to highlight discernible trends and the estimation of single equation models using the ordinary least squares (OLS) method of estimation to establish the existence of the hypothesized relationships.

Summarily, our major findings are that :

(i) The real rate of interest is quite important in explaining changes in financial savings. In a majority of countries, our results support the hypothesized positive relationship between real interest rates and financial deepening. This finding underscores the need for the provision of adequate banking facilities.

(ii) The direct effect of real interest rates on domestic investment could not be tested in this work. However, going through the credit availability route, we provided evidence to the effect that in a majority of countries real interest rates do impact on the supply and availability of credit.

(iii) Our results also support the fact that positive real interest rates do enhance the efficiency of investment.

(iv) From a sample of countries we provided evidence to the effect that there is the tendency to rely on the use of high reserve requirements on the banking system. The result of this excessive taxation of the banking system is a denial of credit to the private sector and a reduction in the nominal rate of interest that can be paid on deposits.

(v) Our results show that inflation adversely affects the holding of all classes of financial assets. This may discourage the process of monetization and influence the allocation of private wealth between financial assets and real wealth which are often used as inflation hedges.

(vi) Our results did not provide support for the interest rate cost-push inflation doctrine as argued by Van Wijnbergen (1982,1985) and others. On the contrary the evidence provided tends to support the dampening effect of interest rates on inflation. The major determinants of inflation in our model are fiscal deficit, which is manifested in excessive monetary growth, and rapid exchange rate depreciation. It is no surprise therefore that the same countries with high fiscal deficit relying more on excessive taxation of the financial system through a system of high reserve requirements, and also undergoing a rapid depreciation of their currency constitute our group of high-inflation countries.

(vii) Our policy analysis suggests that the best policy option will tend to be one that combines a gradual increase in nominal deposit rates with consistent attempt at reducing the inflation rate for the purpose of mobilizing domestic financial savings. In this regard, we find that the emphasis on positive real interest rates which is achieved by raising nominal interest rate excessively is misplaced. Also, the tendency to aim at an inflation-adjusted deposit rate when inflation falls in this early stages of financial development may be counterproductive for financial savings as savers are sensitive to movements in deposit rates especially where such rates are not so high.

Our analysis in this study will tend to suggest that banks through on appropriate use of a combination of adequate deposit rates and the establishment of branch offices can make immense contribution to the mobilization of savings in Africa. However, two issues are of crucial importance here. The first has to do with the necessity for an appropriate regulatory and supervisory framework. The need for this for effective branching is obvious. An appropriate regulatory framework is necessary to foster an adequate geographical spread of branches. Moreover, there is the need to guarantee the safety of depositors funds by ensuring the viability of branches through adequate legislation requiring banks to conform to minimum standards of operation. More importantly an adequate regulatory framework must be put in place to ensure through a system of sectoral allocation that mobilized funds are channelled into investments and identified national priorities. In other words, the stability of the banking system must be ensured through an adequate regulation in order to assure depositor confidence in the financial system. We believe that once an appropriate regulatory and supervisory framework has been put in place the financial system can be liberalized to make for the chartering of more banks and hence break the oligopolistic structure that characterizes bank ownership in most African countries. This will enhance competition and the use of more market determined interest rates in the mobilization of savings. Within such competitive framework, better bank-customer relationships will be a prerequisite for survival [Gelb, (1989b); Long, (1992)].

The second issue has to do with the need to attain macroeconomic stability before embarking on the liberalisation of interest rates granted that appropriate nominal deposit rates would enhance the mobilisation of financial savings. The need to achieve macroeconomic stability and an adequate framework for the regulation and supervision of the banking system before embarking on the liberalisation of interest rates has received some attention in the literature [Cho and Khatkhate, (1989); Stiglitz and Weis, (1987); Dooley and Mathieson, (1987); Dornbusch and Reynoso, (1989); and Villanueva and Mirakhor, (1989)]. Macroeconomic instability is defined as "a situation where large changes in the prices of goods and factors of production lead to increased variance and positive covariance in returns on investment projects; that is many or all investment projects would be affected adversely (favourably) by poor (good) performance" (Villanueva and Mirakhor, 1989, p. 514). Their analysis provide a theoretical framework for the behaviour of bank credit markets during situations of macroeconomic instability and how a weak bank supervision and regulatory framework can exacerbate the situation. Dornbusch and Reynoso (1989) emphasise the importance of price stability as a pre-requisite to successful financial liberalisation. On combining the body of evidence in this study with the observations in Table 16 we can conclude that a majority of countries that have shown the most consistent observation in respect of expected results are those in which nominal interest rates have been rising in the past decade or more. The major sources of macroeconomic instability in most African countries are large fiscal deficits and rapid currency depreciation, the latter a part of the policy package implemented by these countries in their adjustment programmes. These in turn have resulted in high nominal deposit rates in a bid to achieve positive real interest rates. Currency depreciation is often embarked upon as a means of correcting a balance of payments disequilibrium and since the external imbalance is often traceable to excessive monetary expansion which is promoted by large fiscal deficits, efforts at correcting macroeconomic instability is often directed at reducing, if not completely, eliminating the fiscal deficit.

Thus, establishing the appropriate environment for financial liberalisation would mean reducing inflation principally by cutting down on the size of the fiscal deficit. A fiscal deficit can be financed by the issue of domestic debt, the issue of foreign debt and by printing money. Within the context of developing countries with underdeveloped capital markets, the scope for the financing of a deficit through the issue of domestic debt is limited. So, more often than not, the net impact of a deficit financed by recourse to domestic sale of government bonds to the commercial banks and the non-bank private sector and the printing of money is an increase in the domestic stock of money supply which is often inflationary¹⁴. As the government attempts to finance larger deficit, the rate of inflation may increase at an even faster rate. The scope for borrowing from abroad to finance a deficit is severely limited for most African countries who

¹⁴It is possible for a given deficit to be financed by borrowing from commercial banks without the latter discounting at the central bank or by borrowing from the private sector. In the particular circumstance of developing countries, the scope for this kind of borrowing is restricted (See for instance Aghevli and Khan, 1978, p. 358; and Tanzi and Bleijer, 1984, p. 123)

are already overburdened by debt. There is no doubt that this source of financing if properly utilised by government to purchase necessary inputs to make expanded output possible could help to reduce the inflationary pressures. But in the face of mounting debt service requirements and anticipated devaluations, the out flow of capital may by far exceed the net inflow. Moreover, given the reduced access to the automatic capitalization of interest payments, external debt service is likely to lead to increased deficit finance where it is not possible for the country to earn extra resources for external finance. The tendency will be for the government to issue more money to purchase more foreign exchange, or embark on a real depreciation in order to improve the external balance. The larger the stock of debt to be financed, and the severer the depreciation, the more biting will be the inflation (Dornbusch, 1992). The morale of our analysis therefore is that in the particular situation of developing countries, it does not make so much difference whether a deficit is financed by borrowing from the central bank, by borrowing abroad or by borrowing from commercial banks with the banks immediately replenishing reserves by recourse to the central bank; the result is an increase in the inflation rate.

Thus an inevitable approach to the inflation problem is reduction in fiscal deficit. But cutting fiscal deficits has welfare implications. There is a limit to which government consumption expenditure can be reduced. Public investment programmes are a veritable source of growth in most developing countries; so an undue cut in capital expenditures might hurt this source of development. In spite of this obvious limitations, a suggestion can be made for reducing the size of the deficit through proper accountability and a judicious use of resources. In this regard, the suggestion that all items of expenditure be included in the budget estimates as a way of checking extra-budgetary expenditure is a right step in the right direction (Tait, 1989). Off-budget items are very tempting to governments and could be sources of difficulties since they have to be met in most cases by printing money. It has also been argued that outside direct taxes that impinges on the incomes of most households, there are other revenue sources that are yet to be fully exploited in most developing countries. Lesotho's success at reducing its fiscal deficit is not so much a result of sizable reductions in government spending as it is the outcome of directed effort at increasing the revenue base through the improvement in the collection of sales taxes and raising the rate on such items as alcoholic beverages and tobacco¹⁵.

Most importantly, African countries must not only make promises they must be seen as actually reducing the size of the deficits. This raises the issue of credibility. There must be the will to follow through, appropriate monetary and fiscal policy measures as enunciated in annual budgets. In the face of rapid currency depreciation, incomes policy may not be very effective if not accompanied by appropriate monetary and fiscal policies. We have pointed out the crucial role that the attainment of fiscal discipline can play in an adjustment programme. We are not unaware of the difficult task that developing African countries face in this regard given the decline in traditional export earnings, rapid population growth and the attendant expansion in expenditure on social services, excruciating debt service requirements and incessant natural and man-made calamities. In this regard, external resource inflows become inevitable for adjusting

¹⁵See Central Bank of Lesotho, Annual Report for 1990, p. 36

countries¹⁶. The importance of credibility in the assurance of aid inflows cannot be underestimated.

The policy options facing African countries is not an easy one. High interest rates may be a useful device for mobilising private savings but when implemented during periods of inflation and when appropriate regulatory measures have not been put in place, it may be counterproductive. Calvo (1992) has shown the sub-optimality of a programme of high real interest rates in a stabilisation programme. According to him there is the tendency for the domestic interest rate to rise point by point with the expected rate of devaluation and for the resulting high interest rates to lead to a state of generalised bankruptcy (Calvo, 1992, p. 60). What is called for therefore is appropriate sequencing in an adjustment programme. Institutional changes which should include a strong supporting infrastructure, adequate education and adequate information flow is indispensable if the role of the banking system is to be enhanced. Villanueva and Mirakhor (1990) have provided sufficient evidence to show that the success of South-East Asian countries and the failure of Latin American countries (Corbo et.al., 1986) in implementing financial sector reforms hinges to a large extent on the stability of the environment in which the reforms were implemented. This lesson of history cannot be ignored by Africa.

¹⁶It has been argued that the success of Ghana at trimming government borrowing may not be unconnected with the generosity of donors who chipped in close to \$3.5 billion in aid between 1983 and 1991.

DATA APPENDIX

The following is a brief definition of some of the data used in this study:

1. Financial depth (M_3) is defined as total liquid liabilities of the financial system - currency circulation, all types of bank deposits (excluding government and interbank deposits) and deposits held by non-bank financial institutions where available;
2. Financial intermediation ratio (FIR) = M_3/P where P is the consumer price index (CPI);
3. Real interest rate $d-\pi^e$ is computed as,

$$[(1+d)/(1+\pi^e)-1] * 100$$
 where d is the nominal deposit rate on 6 to 12 months deposit in commercial banks and π^e is the percentage of CPI inflation. Expected inflation is used in this estimation of the real interest rate because we believe this is more relevant for intertemporal decision making;
4. The real exchange rate (RER) is computed as,

$$RER = ER * CPI(US)/CPI(X)$$
 where ER = nominal exchange rate
 $CPI(US)$ = is consumer price index of United States of America, and
 $CPI(X)$ = is consumer price index of country X;
5. The incremental capital output ratio (ICOR) is measured as,

$$ICOR = (\text{gross domestic investment}/\text{GNP}) / \text{real growth of GNP}.$$
 The inverse of this, the incremental-output capital ratio (ICOR) is used as a measure of productivity of investment in this study;
6. Reserve ratio is computed as,

$$\frac{\text{Total reserve money} - \text{currency outside banks}}{\text{Money} + \text{Quasi money} - \text{currency outside banks}}$$

The data used are predominantly from the World Bank and International Monetary Fund (IMF) publications. These include various issues of the international Financial Statistics (IFS), Government Finance Statistics Yearbooks, World Tables and World Debt Tables. These are supplemented with data from national publications.

Appendix I: Disaggregated financial deepening equations
(Real interest rate)

Country		α_0 constant	α_1 d-r ^t	α_2 LRGDP	α_3 ldv ^t	R ²	D.W.	F
Botswana	cc	0.043	-0.015	2.333	-0.114	0.32	1.9	1.9
	D ^t	0.011	-0.028	-0.230	-0.024	0.23	1.7	0.8
	Qm	-0.119	0.044	2.951	-0.495	0.71	2.1	6.47
Burkina Faso	cc	0.041	*0.004	0.009	0.135	0.216	2.18	1.56
	D ^t	0.053	*0.007	0.024	0.186	0.27	2.10	1.6
	Qm	0.090	*0.017	*0.057	*0.455	0.48	1.9	5.2
Burundi	cc	0.999	-5.66	2.986	*0.999	0.98	2.4	6.5
	D ^t	0.001	-0.002	*0.997	0.104	0.30	2.3	1.3
	Qm	0.117	0.025	*3.336	0.161	0.64	1.6	5.9
Cameroon	cc	-0.048	-0.008	*1.303	-0.113	0.57	1.9	6.3
	D ^t	0.006	-0.009	*1.101	-0.231	0.25	1.6	1.6
	Qm	0.055	-0.004	*1.509	-0.045	0.38	1.50	2.86
CAR	cc	0.018	*0.009	0.061	0.158	0.12	2.01	0.6
	D ^t	-0.040	-0.0001	0.457	-0.523	0.39	1.7	3.1
	Qm	0.070	-0.002	-0.255	-0.072	0.13	1.9	0.6
Côte d'Ivoire	cc	0.018	-0.004	*2.459	0.206	0.44	1.9	4.1
	D ^t	-0.008	0.004	*5.45	0.012	0.73	2.5	14.11
	Qm	-0.067	0.032	11.44	0.071	0.20	2.07	0.10
Ethiopia	cc	0.048	0.005	0.623	0.043	0.37	1.8	3.4
	D ^t	0.085	-0.002	0.593	-0.197	0.10	1.8	0.7
	Qm	0.090	*-0.014	*1.908	-0.208	0.46	1.6	4.9
Gabon	cc	0.058	-0.011	*1.482	-0.712	0.69	2.13	6.93
	D ^t	-0.059	0.007	0.289	-0.399	0.21	2.23	0.82
	Qm	0.120	-0.012	1.457	-0.737	0.45	2.1	1.8
Ghana	cc	0.015	0.0003	0.883	0.114	0.83	1.6	22.0
	D ^t	-0.031	-0.0001	0.793	0.251	0.70	1.8	10.62
	Qm	-0.021	0.004	0.770	0.366	0.82	1.9	20.0

Country		α_0 constant	α_1 d-r ¹	α_2 LRGDP	α_3 ldv ¹	R ²	D.W.	F
Kenya	cc	-0.012	0.011	-1.598	-0.128	0.28	2.41	2.4
	D ¹	-0.036	*0.010	-1.561	0.117	0.53	1.9	6.8
	Qm	0.007	0.006	*1.611	0.098	0.47	1.9	5.3
Lesotho	cc	0.001	-0.0049	0.282	0.461	0.20	2.12	0.42
	D ¹	0.001	0.0047	0.889	0.014	0.40	1.82	1.12
	Qm	-0.006	-0.0007	0.359	0.491	0.20	2.3	0.43
Mauritius	cc	-0.006	0.003	-0.581	-0.390	0.53	2.2	6.5
	D ¹	-0.032	0.0184	-0.105	0.027	0.53	2.5	6.4
	Qm	0.021	0.013	-0.867	-0.257	0.71	2.1	14.1
Malawi	cc	0.011	-0.004	0.282	0.461	0.20	2.1	0.4
	D ¹	0.007	-0.021	-1.602	0.231	0.32	2.2	0.5
	Qm	-0.008	0.073	-0.444	-0.483	0.35	1.7	0.9
Niger	cc	0.013	-0.0014	-0.846	0.114	0.51	2.3	5.8
	D ¹	0.062	0.001	-0.375	0.207	0.04	1.8	0.27
	Qm	0.216	*-0.018	0.687	-0.535	0.32	2.2	2.5
Nigeria	cc	0.0132	0.0014	-0.846	0.114	0.51	2.3	5.8
	D ¹	0.0104	*0.0091	-0.714	0.323	0.46	2.0	4.9
	Qm	0.022	-0.008	-0.643	0.302	0.54	2.2	6.89
Rwanda	cc	-0.006	0.007	0.035	0.345	0.17	2.0	0.6
	D ¹	0.014	-0.013	*0.939	0.924	0.30	1.9	1.2
	Qm	0.147	-0.009	0.866	-0.375	0.38	2.1	1.6
Senegal	cc	0.023	-0.004	0.653	0.027	0.14	1.8	0.7
	D ¹	0.0150	0.007	*0.937	0.157	0.31	1.81	2.0
	Qm	0.140	*0.012	-0.253	0.080	0.15	2.0	0.8
Seychelles	cc	-0.029	-0.0017	0.637	-0.116	0.41	1.7	1.44
	D ¹	-0.097	0.008	2.189	-0.042	0.47	2.2	1.8
	Qm	0.056	-0.013	1.535	-0.265	0.81	2.6	8.9

Country		α_0 constant	α $d-\pi_t$	α LRGDP	α ldv^1	R^2	D.W.	F
Sierra Leone	cc	-0.014	*-0.002	-0.032	*-0.390	0.14	2.1	0.9
	D ^d	0.066	*-0.005	0.658	*-0.399	0.36	2.4	3.1
	Qm	0.010	0.019	-0.099	0.689	0.53	2.2	6.3
Somalia	cc	0.018	0.009	0.533	0.316	0.31	2.12	2.20
	D ^d	0.063	0.015	0.146	-0.096	0.40	1.9	3.41
	Qm	0.087	0.009	-0.078	-0.034	0.17	1.8	1.08
Swaziland	cc	0.016	-0.011	-0.235	0.025	0.14	2.1	0.5
	D ^d	-0.009	-0.001	1.615	-0.262	0.65	2.3	5.7
	Qm	0.032	0.013	-0.014	0.223	0.31	2.0	1.4
Tanzania	cc	0.014	0.006	0.337	0.288	0.24	2.0	1.7
	D ^d	-0.017	-0.016	1.963	-0.207	0.31	1.9	2.3
	Qm	0.038	-0.003	1.007	-0.346	0.40	0.7	3.43
Togo	cc	0.029	-0.002	-0.237	-0.159	0.123	1.6	0.6
	D ^d	0.015	0.004	*-2.016	-0.391	0.66	1.5	?
	Qm	-0.002	0.0009	0.022	0.168	0.25	1.9	0.13
Zambia	cc	-1.964	0.0009	0.443	-0.236	0.25	2.3	1.7
	D ^d	0.003	0.0008	0.429	-0.295	0.18	2.4	1.16
	Qm	0.058	0.011	0.472	-0.864	0.19	2.1	1.18

* significant at 10% level

* significant at 5% level

1 lagged dependent variable

Appendix 2: Disaggregated financial deepening - OLS regression analysis

Country		α_0 constant	α_1 ERR	α_2 LRdep	α_3	α_4 ldvar.	R ²	D.W.	F
Botswana	cc	0.79	0.797	*-0.270	0.058	-0.124	0.37	1.5	1.06
	D ^d	-0.146	0.641	-0.071	0.159	-0.372	0.21	1.4	0.46
	Qm	-0.338	*-2.868	-0.234	2.039	-0.608	0.77	2.08	6.04
Burkina Faso	cc	0.234	-0.627	-0.013	0.007	-0.159	0.19	1.6	0.9
	D ^d	0.024	**0.801	**0.013	0.004	-0.041	0.34	1.9	2.10
	Qm	0.753	*-1.132	**0.077	0.034	-0.088	0.41	1.4	2.8
Burundi	cc	1.01	7.25	1.05	-7.36	0.99	0.90	2.4	3.4
	D ^d	0.293	-0.075	0.088	0.877	0.139	0.31	2.01	4.0
	Qm	-3.566	*-4.42	*-1.307	1.470	0.026	0.76	1.9	3.0
Cameroon	cc	-0.307	-0.029	-0.098	1.155	0.080	0.56	2.09	4.19
	D ^d	-0.748	*1.495	*-0.230	**1.284	-0.581	0.48	2.2	3.0
	Qm	-0.932	*1.365	**0.330	**2.205	-0.538	0.61	2.3	5.1
CAR	cc	0.207	-0.263	0.059	0.092	0.023	0.94	1.9	0.15
	D ^d	-0.503	-0.822	*-0.184	*0.180	-0.501	0.49	2.2	3.5
	Qm	0.383	-0.415	0.110	-0.080	-0.109	0.027	2.0	0.10
Côte d'Ivoire	cc	-0.690	-0.125	**0.260	**2.502	-0.216	0.64	2.1	6.5
	D ^d	-0.194	-0.449	-0.082	**5.45	-0.09	0.78	2.5	12.4
	Qm	7.19	-6.355	*2.338	17.887	0.093	0.14	1.8	0.61
Ethiopia	cc	2.62	-0.926	0.894	0.215	-0.234	0.47	1.7	3.6
	D ^d	-1.473	-0.824	-0.572	-0.287	-0.108	0.17	2.1	0.8
	Qm	-0.091	-0.411	-0.063	0.300	0.036	0.17	2.3	0.8
Gabon	cc	0.745	**2.281	0.174	-0.291	-0.495	0.47	2.6	1.8
	D ^d	-0.170	0.113	-0.121	*1.040	-0.658	0.71	2.07	4.9
	Qm	-0.100	-0.089	-0.089	0.858	-0.641	0.46	1.6	1.7
Ghana	cc	0.244	*-0.257	0.054	**0.867	-0.146	0.77	2.04	13.7
	D ^d	0.354	-0.3222	0.089	**0.752	0.038	0.48	2.08	3.8
	Qm	0.417	**0.493	*0.090	**0.782	0.072	0.84	1.71	22.2

Gambia	cc	0.013	-0.054	0.107	-0.017	-0.496	0.30	2.6	0.9
	D ^d	0.006	0.109	-0.046	0.054	-0.851	0.65	1.8	3.7
	Qm	0.007	0.078	0.075	0.044	-0.062	0.34	1.6	1.06
Kenya	cc	0.147	-0.507	0.008	0.992	-0.161	0.35	2.3	0.9
	D ^d	-0.011	-0.485	-0.016	^{**} 1.306	-0.121	0.49	1.7	3.7
	Qm	-0.046	0.364	5.47	^{**} 1.629	0.182	0.49	2.6	3.87
Lesotho	cc	-0.086	6.116	0.362	2.034	0.805	0.43	1.6	0.76
	D ^d	0.29	-0.044	0.122	0.965	-0.089	0.42	1.52	0.73
	Qm	-0.012	-1.913	-0.120	-0.072	0.629	0.48	2.02	0.94
Mauritius	cc	0.018	-1.66	-0.077	[*] 0.357	0.083	0.59	1.9	5.9
	D ^d	0.994	-4.760	0.186	^{**} 0.631	[*] -0.301	0.68	2.5	8.9
	Qm	0.278	0.352	[*] 0.129	^{**} 1.118	[*] 0.308	0.74	2.5	11.7
Malawi	cc	0.234	-0.287	0.077	-1.253	0.392	0.29	1.9	0.41
	D ^d	1.096	-0.476	0.480	[*] -1.614	-0.272	0.59	2.7	1.4
	Qm	-0.250	-1.043	-0.221	-1.953	[*] -0.666	0.51	2.29	1.06
Niger	cc	0.059	-0.148	0.010	^{**} 0.984	-0.246	0.48	2.0	3.6
	D ^d	-0.093	-0.038	-0.055	-0.357	0.189	0.05	1.8	0.23
	Qm	-0.406	-0.179	-0.219	-0.061	-0.488	0.23	2.4	1.15
Nigeria	cc	-0.089	0.157	-0.027	^{**} 0.875	0.014	0.51	2.3	4.2
	D ^d	-0.222	-0.343	-0.110	^{**} 0.575	-0.071	0.44	1.7	3.1
	Qm	0.010	^{**} -0.765	-0.061	[*] 0.410	-0.044	0.62	2.0	6.7
Rwanda	cc	-0.364	^{**} -1.691	^{**} -0.157	0.077	0.122	0.64	2.2	3.13
	D ^d	-0.279	-1.037	-0.114	0.849	0.109	0.23	2.6	0.54
	Qm	-0.182	[*] 1.072	[*] 0.182	[*] 0.724	0.109	0.30	2.1	1.7
Senegal	cc	0.165	[*] -0.977	0.014	0.503	0.057	0.27	1.8	1.14
	D ^d	-0.308	-0.028	-0.117	0.484	-0.245	0.29	1.7	1.3
	Qm	0.307	[*] -1.525	-0.005	-0.444	-0.075	0.24	1.9	1.0

Seychelles	cc	0.592	1.738	0.291	1.001	-0.242	0.37	1.9	0.90
	D ^d	-2.53	1.58	-0.999	**3.353	-0.052	0.51	1.9	1.58
	Qm	6.527	*2.624	**2.774	**1.280	*-0.89	0.83	1.6	7.10
Seirra Leone	cc	0.303	-0.550	0.068	-0.526	*-0.423	0.41	2.3	2.6
	D ^d	0.427	*-0.410	0.098	0.361	-0.294	0.44	2.6	2.9
	Qm	0.726	**0.954	*-0.186	*-0.190	-0.277	0.67	1.8	7.7
Tanzania	cc	0.905	-1.526	0.182	-0.884	-0.387	0.54	1.7	4.2
	D ^d	0.620	-1.004	0.138	0.083	-0.213	0.29	1.7	1.4
	Qm	0.222	**1.130	-0.019	-0.055	*-0.445	0.87	2.2	24.0
Togo	cc	-0.241	*1.875	-0.044	0.272	-0.451	0.17	1.9	0.7
	D ^d	-0.046	*1.608	0.024	**2.673	*-0.414	0.74	1.8	10.5
	Qm	-0.082	*-1.068	-0.059	-0.432	0.276	0.18	2.0	0.8
Zambia	cc	-0.85	*0.560	**0.267	0.180	-0.299	0.24	1.9	1.07
	D ^d	0.188	-0.143	0.058	0.385	-0.294	0.19	2.4	0.8
	Qm	-0.252	0.212	-0.093	0.442	-0.138	0.08	2.4	0.30

* significant at 10% level

* significant at 5% level

1 lagged dependent variable

Appendix 3: Government deficits, money supply and inflation in selected SSAS

Country	Gov't deficits as % of total revenue			Average growth rate of money supply (% changes)			Average inflation (% changes in CPI)		
	75-79	80-85	86-90	75-79	80-85	86-90	75-79	80-85	86-89
Benin	1.1	-3.9	-4.3 ^b	6.7	13.4	9.1	na	na	na
Botswana	-1.3	7.4	23.0 ^b	na	13.9	25.1	11.3	13.6	10.2
Burkina Faso	-0.3	-0.3	0.1 ^b	11.5	10.8	5.4	12.0	8.0	0.9
Burundi	-2.7	-7.2	-8.3 ^a	30.9	11.8	1.8	17.3	8.9	7.6
Cameroon	-0.4	-0.2	-2.4 ^a	24.9	16.1	-0.1	11.4	11.5	5.2
CAR	na	-0.9	-0.1 ^a	na	16.7	5.5	na	9.8	-2.4
Chad	-1.8	-1.0	-7.4 ^a	19.3	22.5	-1.4	na	na	1.7
Congo	-5.6	-4.4	-14.8 ^b	8.6	13.5	3.7	10.4	11.1	3.4
Côte d'Ivoire	-8.7	-8.8	na	25.0	7.2	-5.2	17.7	5.7	3.7
Ethiopia	-4.4	-7.0	-9.3	14.9	11.2	12.9	18.5	6.5	4.9
Gabon	-10.2	1.5	-8.8 ^b	6.1	13.5	6.1	12.9	10.0	0.4
Gambia	-6.4	-7.2	-3.0 ^b	10.8	17.9	15.3	10.9	13.6	13.0
Ghana	-8.8	-3.8	0.4 ^b	51.1	43.9	41.0	77.2	57.3	32.3
Kenya	-5.0	-5.8	-5.0 ^b	22.4	9.6	10.9	13.4	13.4	8.8
Lesotho	-6.6	-8.7	-16.1 ^b	na	21.6	16.4	14.2	13.4	12.5
Malawi	-8.0	-9.4	-6.1 ^b	6.9	10.7	19.1	na	13.4	20.9
Mauritius	-8.1	-8.4	-0.4	10.5	5.1	21.8	10.8	8.7	9.2
Niger	-2.4	-7.0	na	31.2	3.5	na	15.9	6.7	na
Nigeria	-4.0	-6.4	-6.8 ^b	22.1	7.7	29.1	17.8	19.9	28.9
Rwanda	na	-4.0	1.3 ^b	22.2	4.2	-1.6	42.6	6.9	2.8
Senegal	-1.0	-4.5	na	13.2	6.4	1.6	6.5	12.2	-1.2
Seychelles	-0.5	-11.1	-6.8 ^b	23.3	14.18	7.3	13.5	3.9	2.3
Sierra Leone	-9.2	-10.4	-15.1 ^a	20.9	43.8	67.9	13.3	51.7	79.4
Somalia	-6.6	-5.7	-5.3 ^a	30.1	23.8	122.0	13.7	45.3	52.7
Sudan	-5.0	-6.5	na	32.0	27.6	49.4	17.1	31.4	49.6
Tanzania	-8.0	-7.4	-2.9 ^b	22.5	12.8	33.8	11.0	30.1	28.6
Togo	-20.5	-3.2	-2.3 ^c	24.2	6.8	-6.9	10.4	6.4	-0.1
Uganda	-3.4	-3.1	-2.4 ^a	32.7	67.4	na	na	57.5	165.2
Zaire	-6.6	-2.4	-6.1 ^b	39.8	55.2	108.8	70.6	47.3	90.1
Zambia	-14.5	-13.6	-12.6 ^b	9.2	17.9	na	16.5	19.7	62.7
Zimbabwe	-7.7	-8.5	-8.9	9.2	8.8	22.3	10.5	15.9	12.0

a= refers to 1988
b= refers to 1989
c= refers to 1986

Table 1: Financial depth and the financialisation of savings
in selected SSAS

Country	M ₂ /GDP			QM/M ₂			M ₂ /DC			DCP/DC			DCG/DC		
	76-80	81-85	86-90	76-80	81-85	86-90	76-80	81-85	86-90	76-80	81-85	86-90	76-80	81-85	86-90
Burkina Faso	19.0	19.4	24.3	17.8	24.4	28.3	102.9	121.8	192.0	111.6	105.3	141.4	-12.2	-13.5	-45.5
Burundi	13.8	17.2	17.3	8.4	26.2	27.6	161.1	80.9	87.2	56.7	34.1	33.5	28.1	49.2	43.9
Cameroon	20.2	21.2	18.3	36.4	41.5	44.5	91.7	94.1	78.2	87.4	110.5	108.0	-5.4	-16.5	-8.1
Congo	18.0	19.0	18.0	11.2	21.5	26.3	62.5	62.7	61.9	69.2	87.7	82.4	30.7	12.2	17.3
Côte d'Ivoire	31.4	27.3	31.5	26.9	27.0	34.7	98.4	65.6	68.8	112.7	96.6	81.5	-13.2	1.2	16.3
Ethiopia	25.0	33.1	46.6	32.5	28.2	28.2	104.7	78.0	80.5	30.8	9.5	6.2	42.8	48.5	55.5
Gabon	18.7	17.6	25.1	19.6	37.6	41.0	87.6	112.2	73.3	83.6	107.2	71.5	16.3	-7.2	24.8
Gambia	21.4	25.0	26.0	32.4	35.4	43.1	68.7	43.9	133.6	42.8	61.1	-30.4	57.1	38.8	132.0
Ghana	25.7	16.9	13.5	24.7	22.1	19.2	80.7	76.9	62.8	16.4	9.2	14.1	62.2	69.7	71.0
Kenya	38.2	39.2	40.5	43.1	49.5	53.4	114.4	86.1	84.4	69.4	59.6	54.4	24.0	34.7	35.8
Lesotho	na	51.2	51.5	na	58.9	56.0	na	156.4	128.0	na	41.0	38.1	na	49.9	56.8
Malawi	20.3	21.3	22.0	43.6	55.6	52.1	71.8	56.0	93.7	42.1	39.9	39.4	24.1	46.4	45.6
Mauritius	46.4	44.1	61.3	49.1	65.4	76.6	97.7	72.4	123.6	51.1	38.2	64.1	48.8	61.7	35.8
Niger	13.9	14.1	18.0	12.9	18.8	32.9	163.0	80.4	12.6	66.4	92.6	75.2	67.5	6.5	15.8
Nigeria	23.4	32.2	26.8	33.6	40.3	43.6	133.0	77.2	79.7	63.1	45.0	45.2	34.6	52.0	50.0
Rwanda	13.9	12.8	17.1	20.1	31.4	41.9	114.2	185.9	129.7	108.2	93.1	59.4	-17.0	2.9	33.4
Senegal	27.9	29.5	na	20.0	30.2	na	72.7	58.5	na	89.5	75.7	na	9.0	23.1	na
Seychelles	32.8	24.2	34.4	49.7	53.6	65.4	148.2	107.6	95.8	95.0	46.8	19.0	3.6	33.8	75.3
Sierra Leone	23.8	25.5	33.3	39.1	35.0	19.6	77.3	59.0	91.1	27.6	12.9	18.2	70.9	86.0	81.1
Somalia	24.3	15.7	19.2	16.2	20.9	24.5	148.0	119.6	179.6	33.4	27.6	32.1	33.5	55.9	77.6
Swaziland	33.0	33.4	34.5	63.9	68.4	69.2	435.0	156.8	308.8	276.6	116.6	178.4	-176.06	-16.6	-39.2
Tanzania	33.6	38.9	30.2	24.0	29.1	28.0	98.7	86.6	79.8	7.8	5.1	6.1	98.8	94.7	93.7
Togo	32.1	43.8	48.6	2.8	1.6	1.3	114.5	179.0	184.5	92.6	90.2	92.8	21.0	10.7	7.5
Zambia	36.3	36.4	32.4	34.2	40.4	44.9	58.8	45.2	65.4	31.8	29.1	27.2	68.0	70.7	72.7

Sources: (a) International Financial Statistics
(b) National Publications

Table 2. FIR ratios for selected countries

Country	FIR ratio		
	1975	1981	1987
Japan	84.7	89.1	108.6
Canada	54.3	54.8	65.4
Chile	21.1	24.4	27.9
Argentina	25.4	32.9	29.4
USA	38.8	33.1	62.7
Germany	54.4	54.0	60.3
Thailand	34.0	38.5	66.1
Rep. of Korea	30.8	33.3	40.4

Source: UN: Savings and Credit for Development (1990).

Table 3: Financial deepening: Individual country regressions
(quarterly series)

Dependent variable - Broad money

Country	α_0	α_1	α_2	α_3	R^2	DW	F
Botswana	-0.056	0.0004 (0.044)	0.092 (1.852)	-0.0518 (-0.244)	0.10	1.3	1.17
Burundi	0.019	0.007 (1.789)**	0.041 (2.28)**	-0.178 (-1.186)	0.19	2.02	3.00
Cameroon	0.0009	0.010 (3.137)**	0.015 (0.472)	0.382 (2.135)**	0.30	2.09	3.87
Côte d'Ivoire	0.0021	0.0076 (1.346)	0.166 (4.376)**	0.221 (1.327)	0.39	2.17	6.40
Ghana	-0.024	0.016 (3.892)**	-0.0596 (-0.717)	0.557 (1.441)	0.38	1.79	5.12
Kenya	0.003	0.021 (3.678)**	-0.036 (-0.901)	0.216 (1.490)	0.28	2.09	5.13
Malawi	-0.001	0.004 (0.779)	0.235 (5.291)**	-0.391 (-2.81)	0.58	2.16	18.1
Lesotho	0.004	0.0015 (0.677)	-0.005 (-0.199)	-0.204 (-1.17)	0.60	2.0	0.87
Mauritius	-0.117	0.0064 (1.650)	0.044 (1.901)	-0.127 (-0.777)	0.36	1.79	7.02
Nigeria	-0.012	0.037 (6.050)**	0.032 (0.952)	0.117 (1.032)	0.53	1.98	14.6
Niger	-0.004	0.007 (4.746)**	-0.070 (-1.90)	0.787 (4.885)**	0.38	1.99	4.0
Rwanda	0.004	0.059 (2.229)**	0.029 (1.115)	-0.281 (-1.668)	0.15	2.11	2.29
Sierra Leone	-0.015	0.008 (4.55)**	0.013 (0.757)	0.529 (2.862)**	0.36	2.3	7.12
Swaziland	0.024	-0.023 (-1.074)	0.310 (1.697)	-0.516 (-3.383)	0.29	2.3	4.5
Tanzania	-0.019	0.0004 (0.171)	0.005 (0.245)	-0.149 (-0.758)	0.22	2.08	0.21
Zambia	-0.007	0.0138 (7.135)**	0.231 (2.299)**	0.575 (3.826)**	0.70	1.86	30.8
Seychelles	-0.410	-0.005 (-0.771)	-0.913 (-17.031)	1.106 (20.274)**	0.92	1.50	15.3

t-statistics are in parentheses

Table 4: Domestic credit to the private sector OLS regression

Country	Constant	$\Delta(d-r^2)$	$\Delta \log PCRY$	$\Delta \log (DCP/Y)_1$	R^2	D.W.	F
Botswana	-0.042	0.036 (0.940)	2.370 (2.072)**	-0.486 (-2.773)**	0.67	2.1	3.1
Burundi	2.392	0.0077 (1.286)	3.387 (1.052)	0.416 (2.638)	0.87	2.4	2.4
Cameroon	-0.0018	0.0015 (0.276)	1.001 (16.8)	0.086 (1.374)	0.92	2.1	116.3
Cote d'Ivoire	3.795	0.0191 (2.248)	0.903 (32.5)	0.035 (1.098)	0.97	2.2	406.0
Ethiopia	-0.026	0.058 (2.787)	1.313 (0.386)	0.199 (1.329)	0.61	2.3	3.19
Ghana	-0.069	0.0019 (1.450)	0.058 (2.420)**	0.452 (2.038)**	0.69	1.8	2.4
Kenya	0.0007	0.0305 (1.617)	0.938 (1.435)	-0.665 (-5.393)	0.51	2.6	11.5
Lesotho	0.201	0.0136 (3.274)	0.447 (7.010)**	0.265 (2.520)**	0.65	1.8	22.7
Malawi	0.0306	0.0105 (1.963)	1.042 (22.71)**	0.142 (3.158)**	0.93	2.0	183.6
Mauritius	0.068	0.0019 (0.186)	-0.981 (-12.2)	0.0014 (0.019)	0.84	2.2	64.2
Niger	0.902	0.0008 (0.111)	-0.0085 (-0.038)	1.485 (4.433)**	0.85	2.0	10.1
Nigeria	0.0029	0.0252 (1.578)	0.732 (8.45)**	-0.064 (-0.667)	0.69	2.1	27.8
Rwanda	1.465	0.0064 (1.969)	-0.244 (-3.363)**	0.442 (3.04)**	0.44	1.5	35.2
Seychelles	181.0	3.467 (2.096)	125.9 (9.4)**	0.367 (4.369)**	0.73	1.5	35.2
Swaziland	0.759	-3.157 (-0.004)	-0.953 (-11.01)**	0.214 (2.554)**	0.78	1.6	40.7
Sierra Leone	0.248	0.412 (1.812)	0.972 (1.901)**	0.189 (0.240)	0.69	1.9	40.0
Tanzania	1.306	0.003 (1.606)	-0.448 (-5.01)	0.394 (3.642)	0.61	1.9	20.1
Zambia	1.193	0.009 (1.951)	0.260 (5.382)	0.706 (4.927)**	0.63	2.2	16.3

t-values are indicated in parentheses

** significant at 5% level

** significant at 10% level

Table 5: Investment Efficiency: Individual country OLS regression results

Dependent variable: IOCR (Incremental output-capital ratio)

Country	Constant (a_0)	Independent variable ($d-x$)	R^2	D.W.	F
Burkina Faso	1.138	0.151 (3.274)	0.40	2.4	10.7
Burundi	0.476	0.036 (0.206)	0.11	1.8	1.74
Cameroon	0.212	0.0158 (0.656)	0.11	0.82	0.20
CAR	0.254	0.0135 (0.479)	0.013	2.2	0.24
Congo	0.071	-0.040 (-1.632)	0.14	1.4	2.7
Côte d'Ivoire	0.093	-0.0046 (-0.277)	0.4	1.1	0.07
Ethiopia	-0.094	0.075 (9.411)**	0.82	2.53	88.6
Gabon	0.193	0.0131 (0.488)	0.13	1.52	0.23
Gambia	0.275	0.030 (0.949)	0.07	1.83	0.90
Ghana	0.341	0.299 (4.319)**	0.52	1.53	18.6
Kenya	0.210	0.017 (2.081)**	0.18	1.60	4.34
Malawi	0.061	0.0069 (0.636)	0.063	1.86	0.40
Mauritius	0.426	0.037 (2.430)**	1.51	1.51	5.90
Nigeria	0.926	0.082 (2.626)**	0.28	1.71	6.89
Rwanda	0.161	-0.006 (-0.410)	0.015	1.8	0.16
Senegal	0.158	0.014 (0.606)	0.23	2.20	1.2
Seychelles	0.046	0.027 (1.805)	0.26	1.16	3.25
Sierra Leone	0.130	0.0185 (2.104)	0.21	1.86	4.43
Somalia	0.556	0.027 (2.163)	0.27	2.85	6.8
Tanzania	0.425	0.035 (4.690)	0.56	1.61	22.0
Togo	0.198	0.015 (1.802)	0.15	1.74	3.24
Zambia	-0.311	-0.044 (-3.826)	0.46	1.22	14.6
Swaziland	0.330	0.011 (0.328)	0.08	1.73	0.10
Botswana	0.464	-0.111 (-1.923)	0.34	1.40	3.7

Table 6: Reserve requirements tax

	1980	1981	1982	1983	1984	1985	1986	1987	1988	Average (88-89)
Nigeria										
As % of GDP	4.0	1.0	8.0	7.5	0.7	2.5	1.0	8.6	6.3	4.4
As % of M2	15.0	3.9	31.8	26.4	2.4	8.9	3.9	40.6	29.2	18.0
As % of Govt. Revenue	25.0	7.8	65.1	67.7	6.7	18.7	5.7	48.4	35.3	31.1
Ghana										
As % of GDP	10.9	1.6	13.1	0.6	1.4	2.4	2.8	1.9	1.7	4.0
As % of M2	72.9	11.9	91.1	7.6	21.6	21.6	24.8	15.9	13.3	30.2
As % of Govt. Revenue	190.9	30.7	236.5	8.7	19.8	19.8	19.9	13.4	12.8	60.8
Kenya										
As % of GDP	1.3	3.1	1.0	0.9	0.8	0.9	0.8	1.0	0.9	2.9
As % of M2	4.9	11.4	3.3	3.2	2.8	3.4	2.9	3.5	3.4	10.3
As % of Govt. Revenue	6.2	14.1	4.5	4.1	3.6	4.1	3.9	4.4	4.0	13.0
Ethiopia										
As % of GDP	5.3	8.2	7.8	3.2	11.9	4.0	4.3	4.1	11.5	7.4
As % of M2	20.7	30.2	26.9	10.2	34.6	10.2	9.6	9.4	25.2	19.8
As % of Govt. Revenue	28.5	30.4	38.5	15.8	52.2	18.0	15.7	15.8	39.6	29.1
Country	1980	1981	1982	1983	1984	1985	1986	1987	1988	Average (88-89)
Cote d'Ivoire										
As % of GDP	1.7	1.7	2.2	2.0	1.8	1.6	0.9	1.1	1.1	2.1
As % of M ₂	6.7	6.6	8.6	8.1	6.5	5.4	3.1	3.7	3.7	7.5
As % of Gov. Revenue	6.9	7.0	8.8	7.4	6.1	5.8	4.1	5.5	5.6	6.4
Zambia										
As % of GDP	3.3	3.3	6.0	6.5	10.6	4.5	7.8	11.7	18.9	7.1
As % of M ₂	7.0	10.2	4.2	19.1	2.4	2.8	3.3	32.6	2.9	9.4
As % of Gov. Revenue	9.6	12.4	9.4	67.0	7.4	11.9	7.5	97.8	na	27.8
Sierra Leone										
As % of GDP	1.6	2.1	1.1	5.6	0.6	0.7	1.0	6.2	0.6	2.2
As % of M ₂	7.0	10.2	4.2	19.1	2.4	2.8	3.3	32.6	2.9	9.4
As % of Gov. Revenue	9.6	12.4	9.4	67.0	7.4	11.9	7.5	97.8	na	27.8
Tanzania										
As % of GDP	1.4	0.3	0.3	0.27	1.1	0.24	5.4	2.6	2.1	1.5
As % of M ₂	0.6	0.01	0.12	0.11	0.4	0.08	1.7	0.8	0.58	0.5
As % of Gov. Revenue	2.8	0.05	0.7	0.06	2.4	0.47	11.9	5.8	0.05	2.7

Sources: Figures for Nigeria, Ghana, Kenya, Zambia and Cote d'Ivoire were extracted from Chamley and Honohar (1990). Figures for Ethiopia, Tanzania and Sierra Leone were computed from IFS and National Publication.

Table 7: Reserve ratios on bank deposits (Percentages)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1980-84	1985-90
Developed countries													
Australia	5.3	5.3	5.2	5.1	4.8	5.0	4.8	4.4	3.7	2.5	2.1	5.1	3.7
Germany	8.7	8.0	7.9	7.5	7.4	7.0	6.8	6.9	6.8	7.2	7.2	7.9	6.9
Japan	2.8	2.3	2.3	2.4	2.5	2.2	1.9	1.8	2.1	1.8	2.3	2.5	2.0
U.K.	2.8	2.0	1.9	1.4	1.5	2.1	2.2	1.2	1.2	1.2	1.2	1.2	1.1
USA	3.1	2.9	2.6	2.1	2.0	2.2	2.8	2.6	2.5	2.5	2.5	2.5	2.5
Africa South of the Sahara													
Cote d'Ivoire	5.8	6.1	4.6	5.5	5.5	12.9	13.5	17.3	8.9	4.0	4.5	5.5	10.1
Ethiopia	27.9	36.8	35.0	27.7	34.6	27.1	35.2	28.3	33.7	31.6	23.1	32.4	29.8
Rwanda	24.0	8.8	9.8	12.2	11.8	14.8	16.8	18.2	10.3	6.7	6.5	13.3	12.2
Kenya	10.6	7.0	11.6	8.5	9.2	10.1	12.8	13.7	11.1	12.3	14.3	9.4	10.0
Nigeria	29.5	21.2	20.6	15.5	14.5	15.7	16.8	15.7	15.8	21.5	22.5	20.2	18.0
Sierra Leone	26.9	26.5	44.1	33.5	42.3	32.2	32.0	64.8	55.5	54.7	42.7	34.6	46.9
Tanzania	2.5	3.7	3.7	3.3	5.5	5.1	4.4	7.9	8.7	3.7	6.5
Zambia	18.0	18.3	16.1	16.6	16.4	16.5	32.4	27.2	36.7	28.1	33.6	17.1	29.1
Latin America													
Bolivia	30.8	28.6	42.3	49.8	39.2	23.8	16.4	11.4	22.9	30.7	21.7	38.1	21.1
Chile	28.1	14.0	5.2	5.7	9.8	186.7	180.9	142.1	105.7	75.8	99.4	12.5	131.7
Colombia	45.7	41.2	38.1	33.7	33.0	37.3	..	30.7	29.1	38.3	32.3
Uruguay	7.6	7.5	4.4	8.6	11.5	12.3	11.1	15.2	13.4	5.4	7.1	7.9	10.7
South East Asia													
Korea	12.9	5.6	7.2	9.0	6.9	4.0	5.1	8.4	10.4	12.7	11.0	8.3	8.6
Malaysia	7.6	7.6	7.0	6.3	5.5	17.2	6.3	5.5	5.6	8.2	10.5	6.8	8.8
Philippines	12.4	14.9	15.8	9.4	19.9	11.3	17.1	16.1	15.0	17.4	16.7	14.4	15.6
Thailand	5.5	5.4	4.6	4.1	3.3	4.2	4.0	4.1	4.0	3.4	3.4	4.5	3.8

.. not available

Table 8: Inflation - Real interest rate OLS regression results for

Country	Constant	d - π	log PCRY	$\Delta \log$ RECHR	$\Delta \log$ MS ₁	R ²	D.W.	F
	b ₀	b ₁	b ₂	b ₃	b ₄			
Ghana	-4.40	-2.476 (-11.70)	-19.53 (-1.86)	8.481 (1.877)	-0.367 (-1.294)	0.93	2.4	61.3
Kenya	370.8	-0.895 (-2.579)	-74.04 (-3.13)	-25.03 (-2.055)	316.8 (2.40)	0.48	2.5	3.34
Nigeria	0.622	-1.400 (-35.72)	-0.1376 (-1.38)	0.8072 (3.02)	0.004 (10.17)	0.99	2.3	455.0
Tanzania	7.386	-1.216 (22.81)	-0.0814 (-3.56)	0.1087 (7.25)	0.3784 (4.216)	0.99	2.3	515.5
Sierra Leone	1.718	-0.012 (-3.07)	-0.495 (-3.40)	-0.345 (-4.922)	-0.051 (-0.197)	0.91	1.9	53.4
Zambia	0.109	-0.013 (-8.975)	-0.026 (-2.819)	0.0539 (3.075)	0.069 (1.565)	0.98	1.6	271.5
Dependent Variable: $\Delta \log$ GDP (change in log of GDP deflator)								
Ghana	0.184	-0.011 (-6.215)	-0.223 (-2.461)	0.065 (1.674)	-0.0051 (-2.112)	0.83	2.4	19.7
Kenya	0.765	-0.007 (-2.611)	-0.228 (-1.173)	0.078 (0.781)	1.622 (1.496)	0.35	2.0	1.9
Nigeria	-0.94	-0.001 (-0.325)	0.149 (1.354)	0.054 (0.975)	0.143 (0.890)	0.32	2.1	1.7
Tanzania	0.168	-0.0006 (-0.256)	-0.146 (-2.614)	0.022 (0.404)	0.042 (0.265)	0.65	1.3	6.6
Sierra Leone	0.772	-0.003 (-0.888)	-0.227 (-1.690)	-0.019 (1.734)	0.293 (1.216)	0.77	2.3	15.6
Zambia	149.0	-4.175 (-1.809)	-34.8 (-2.334)	-10.75 (-0.389)	82.16 (1.171)	0.85	1.9	25.3

t-values are indicated in parentheses

Table 9: Relative Strengths of Explanatory Variables

Countries	MS ₁	d-IF	PCRY	RECHR
Ghana	-0.007 (2)	-0.068 (3)	-0.290 (4)	0.431 (1)*
Kenya	15.53 (1)	-0.764 (4)	-0.474 (3)	-0.360 (2)
Nigeria	0.075 (2)	-1.040 (4)	-0.037 (3)	0.098 (1)
Sierra Leone	-0.018 (3)	-0.0184 (4)	-0.131 (2)	-0.101 (1)
Tanzania	0.175 (2)	-0.764 (4)	-0.162 (3)	0.242 (1)
Zambia	0.089 (2)	-0.124 (3)	-0.812 (4)	0.148 (1)

Ranking is indicated in parentheses. Relative strengths of explanatory variables are computed as the Beta Co-efficients of the variables:

$$\beta\text{-coefficient} = \frac{\text{coefficient of } X_i \text{ times standard dev. of } X_i}{\text{standard deviation of } Y}$$

Where X_i = explanatory variable
 Y = dependent variable

Table 10: OLS regression results with dummy variables

Dependent variable: $\Delta \log M_2$

Countries	Const.	Independent variable			R^2	D.W.	F
		Dumint	$\Delta \log \text{RGDP}$	lagged $\Delta \log M_2$			
Burundi	0.018	0.0099 (1.798)*	0.0467 (2.577)**	-0.155 (-1.042)	0.19	2.1	3.03
Côte d'Ivoire	0.003	0.0010 (0.162)	0.153 (4.03)**	0.123 (0.788)	0.36	2.0	5.4
Cameroon	0.0009	0.0109 (3.137)**	0.0150 (0.472)	0.382 (2.135)**	0.30	2.09	3.8
Ethiopia	0.0083	0.0097 (6.973)*	0.0490 (5.375)**	0.568 (4.847)**	0.63	2.6	20.7
Ghana	-0.008	0.0251 (4.679)**	-0.049 (-0.650)	0.544 (1.549)*	0.47	2.0	7.4
Kenya	0.054	0.0237 (2.809)**	-0.0552 (-1.304)	0.136 (0.908)	0.20	2.0	3.2
Nigeria	-0.0165	0.0351 (4.797)**	0.056 (1.603)*	0.037 (0.304)	0.46	1.8	10.1
Rwanda	0.0036	0.123 (2.272)**	0.0266 (1.001)	-0.285 (-1.681)*	0.16	2.0	2.3
Sierra Leone	-0.025	0.0058 (2.589)**	0.0105 (0.513)	0.221 (1.185)	0.16	2.0	2.4
Tanzania	-0.0272	0.0098 (1.727)*	0.0165 (0.694)	-0.390 (-1.690)*	0.11	1.9	1.2
Zambia	-0.0096	0.0137 (6.810)**	0.091 (1.484)*	0.549 (3.535)**	0.68	1.9	26.4

t-values are in parentheses

* : 10% level of significance

** : 5% level of significance

Table 11: Test for stability

Countries	F*	F ^T at 5%	F ^T at 10%	Decision
Burundi	0.19	2.69	2.14	Accept H ₀
Cameroon	1.27	2.87	2.25	Accept H ₀
Côte d'Ivoire	1.31	2.87	2.25	Accept H ₀
Ghana	3.34	3.11	2.39	Reject H ₀ at 5% level
Kenya	1.63	2.69	2.14	Reject H ₀ at 10% level
Nigeria	5.90	2.69	2.14	Reject H ₀ at 5% level
Rwanda	0.77	2.87	2.25	Accept H ₀
Sierra Leone	2.57	2.69	2.46	Reject H ₀ at 10% level
Tanzania	2.33	2.69	2.14	Reject H ₀ at 10% level
Zambia	0.57	2.69	2.14	Accept H ₀

Table 12: OLS regression results before and after policy changes
 Dependent variable: $\Delta \log M_2$

Countries		Independent variables					
		Constant	(d-IP)	$\Delta \log \text{RGDP}$	logged $\Delta \log M_2$	R ²	D.W.
Burmali ¹ :	a	0.0280	0.0020	0.0690	-0.129	0.23	2.10
	b	0.0200	*0.0100	*0.0287	*-0.234	0.26	2.00
Cameroon ¹ :	a	0.0253	0.0053	0.0134	*0.266	0.08	2.04
	b	-0.0138	*0.0127	*0.0676	*-0.439	0.57	2.50
Côte d'Ivoire ¹ :	a	0.0030	*0.0199	*0.1760	*0.391	0.51	2.10
	b	-0.0028	-0.0044	*0.1886	*0.339	0.48	2.20
Ghana ¹ :	a	0.0227	*0.0078	0.0270	*0.945	0.51	2.10
	b	-0.0170	***0.0345	*-0.5200	0.707	0.67	2.00
Kenya ¹ :	a	-0.0132	*0.0164	-0.0290	-0.051	0.28	2.20
	b	0.0103	*0.0229	-0.0240	*0.254	0.30	2.00
Nigeria ² :	a	-0.0270	*0.0418	-3.7500	-0.111	0.50	1.60
	b	-0.0110	*0.0337	*0.1300	*0.246	0.79	2.40
Rwanda ¹ :	a	-0.0060	0.0440	0.0260	-0.250	0.08	2.00
	b	0.0150	*0.1440	0.0340	-0.431	0.31	1.60
Sierra Leone ¹ :	a	-0.0070	***0.0120	-0.0030	*0.717	0.50	2.08
	b	-0.0210	*0.0070	*0.1200	*0.523	0.46	2.60
Tanzania ² :	a	-0.0420	0.0010	-0.0133	-0.209	0.09	1.90
	b	-0.0090	*0.0137	0.0141	-0.726	0.23	2.00
Zambia ¹ :	a	0.0018	*0.0059	*0.2170	*0.397	0.43	2.30
	b	-0.0110	***0.0144	*0.1220	*0.648	0.75	1.80

a: before policy changes

b: after policy changes

*: significant at 10% level

**: significant at 5% level

***: significant at 1% level

1: group of countries that achieved policy changes through reduction in inflation

2: group of countries that achieved policy changes through increases in nominal deposit rates

Table 13: Results of historical simulation

	Root mean square error	Root mean square % error	Mean error	Mean % error
Burundi	0.08	34.5	0.0003	-5.648
Cameroon	0.06	1.48	-0.0129	-0.280
Côte d'Ivoire	0.07	0.97	-0.0003	-0.65
Ethiopia	0.022	1.39	-0.0004	-0.24
Ghana	0.21	35.1	2.15	6.35
Kenya	0.03	23.7	-9.7	-5.13
Nigeria	0.047	5.1	-1.502	0.18
Rwanda	0.061	1.6	-0.001	-0.67
Sierra Leone	0.08	6.2	0.0004	0.26
Tanzania	0.08	5.3	-0.0004	-1.74
Zambia	0.07	3.0	0.0003	-0.06

Table 14: Direct and total effects of real interest rate and real income changes on financial deepening

	Real interest rate (changes)		Real income (changes)	
	Direct	Total	Direct	Total
Burundi	0.0024	0.0014	0.069	-0.09
Cameroon	0.0109	0.420	0.0151	0.099
Côte d'Ivoire	0.0076	0.171	0.166	0.486
Ethiopia	0.009	0.026	0.049	-0.036
Ghana	0.016	0.394	-0.059	0.0006
Kenya	0.021	0.162	-0.0404	-0.96
Nigeria	0.0370	0.485	0.0376	0.006
Rwanda	0.091	0.249	0.0308	0.167
Sierra Leone	0.0087	0.136	0.0135	0.017
Tanzania	0.0004	-0.015	0.0059	-0.23
Zambia	0.0135	-0.375	0.138	0.184

Table 16: Nominal deposit rate movements and financial development

COUNTRY Group A	Average deposit rate			Regression results: with respect to interest rate		
	1975-79	1980-85	1986-90	Financial deepening	Credit availability	Efficiency of investment
Burundi	2.5	4.3	5.7	/	/	*
Ghana	11.5	12.8	17.0	/	/	/
Kenya	5.1	10.5	11.5	/	/	/
Malawi	-	10.3	13.1	/	*	*
Mauritius	-	10.0	10.5	/	/	/
Nigeria	3.4	9.2	11.2	/	/	/
Somalia	4.0	8.1	19.3	/	*	/
Tanzania	4.0	4.1	14.7	*	*	/
Zambia	5.7	8.2	14.1	/	/	x
Sierra Leone	10.0	10.6	20.7	/	/	/
Seychelles	-	9.2	10.0	*	/	/
Group B						
Botswana	-	9.2	6.6	*	x	x
Burkina Faso	6.0	7.1	6.0	/	...	/
Centrafrique	-	7.2	7.2			
Cameroon	6.0	7.5	7.3	/	*	*
Côte d'Ivoire	6.0	7.1	6.0	/	/	x
Niger	6.0	7.1	6.0	/	...	x
Senegal	6.0	7.1	6.0	*	...	*
Swaziland	7.0	10.8	7.5	x	x	*
Togo	6.0	7.1	6.0	*	...	/
Rwanda	6.0	6.3	6.4	/	/	x
Ethiopia	6.0	6.0	5.8	*	*	/

Source: Data on deposit rate movement from African Development indicators

- / rightly signed and significant
- * rightly signed but not significant
- x insignificant/wrongly signed
- a annual series
- ... not available

Figures 6(i) - (iv): Simulation results

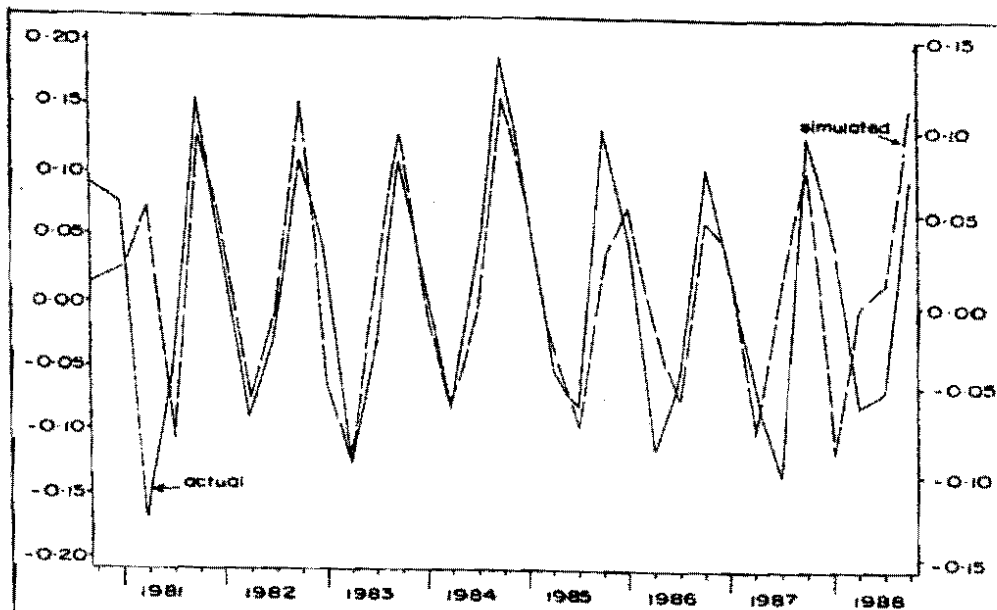


Figure 6(i) Cameroon: Historical simulation: 1980-4 to 1988-4

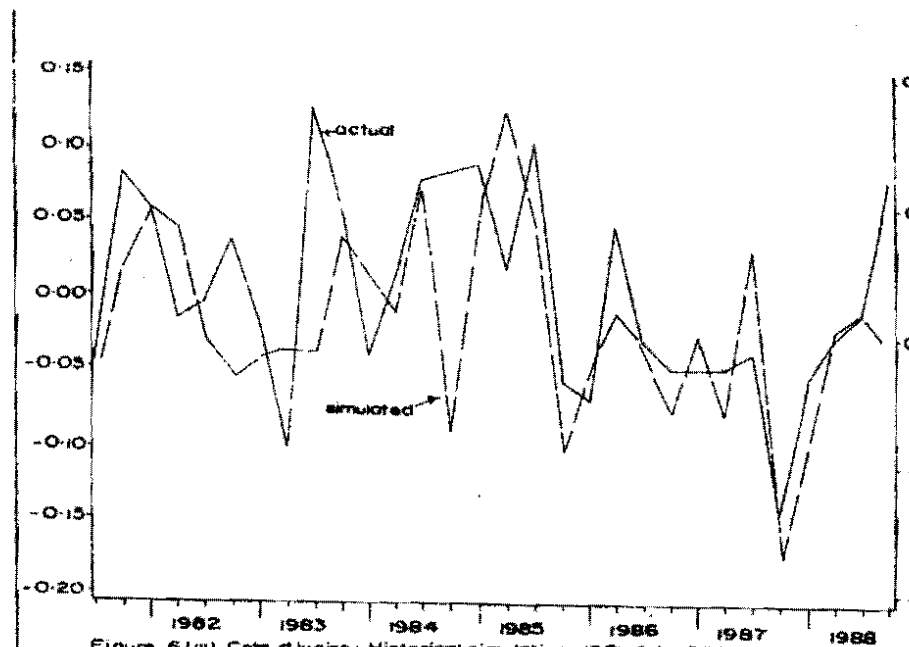


Figure 6(iii) Côte d'Ivoire: Historical simulation: 1981-4 to 1988-4

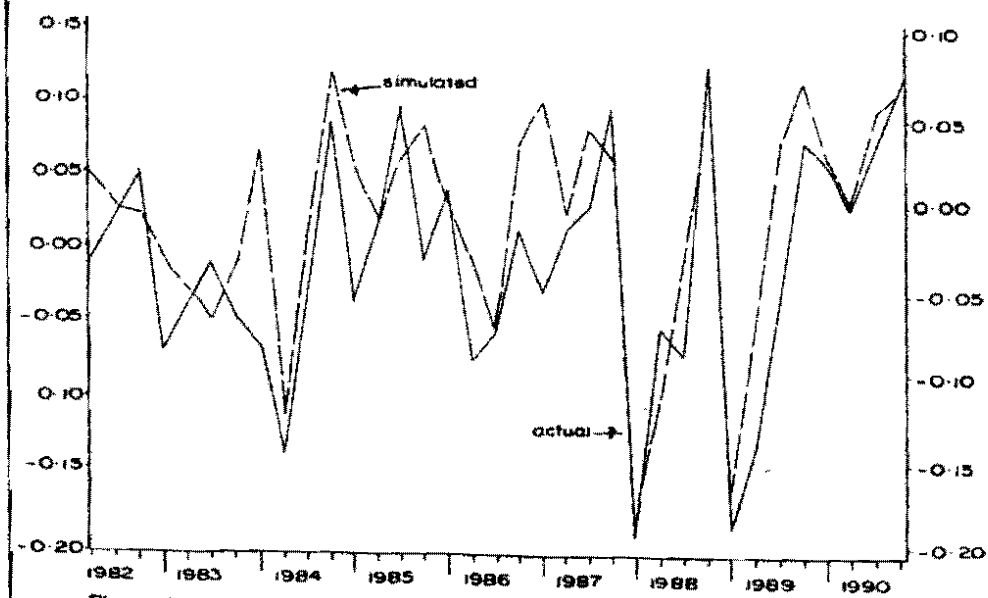


Figure 6(ii) Rwanda: Historical simulation: 1982-1 to 1990

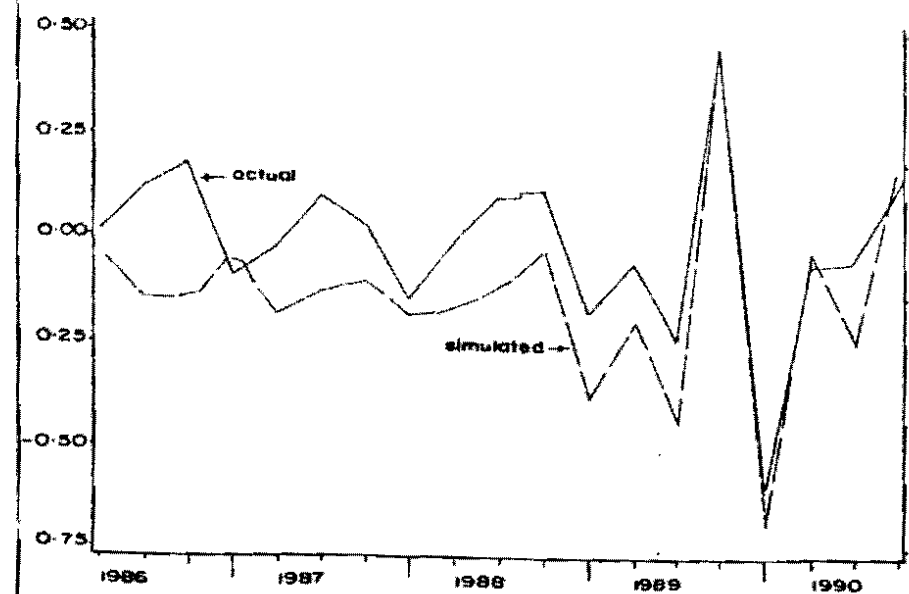


Figure 6(iv) Zambia: Historical simulation: 1986-1 to 1990-4

Figures 6(v) - (viii): Results of policy experiments

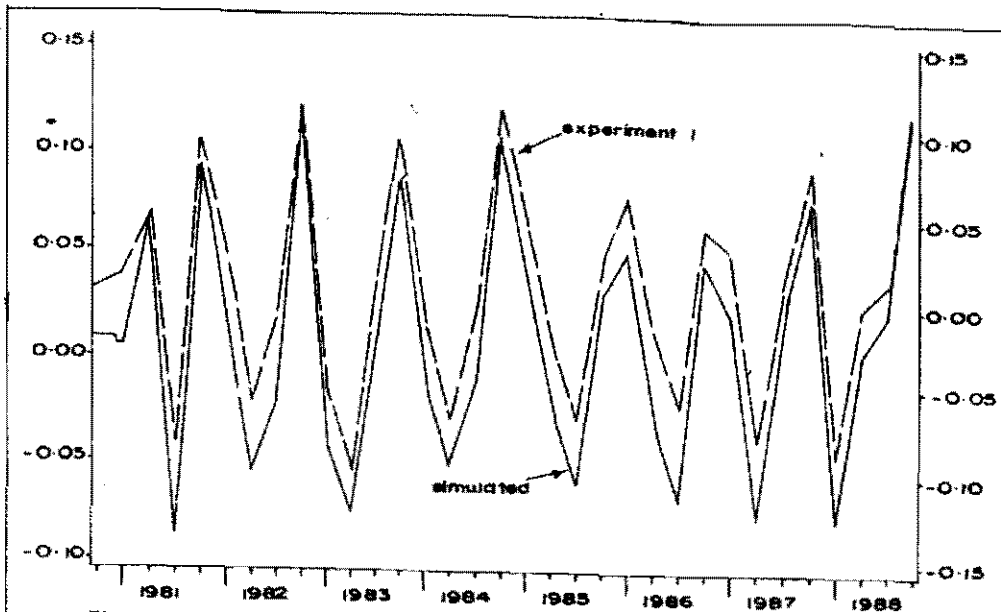


Figure 6(v). COTE D'IVOIRE: Experiment 1: Allowing for nominal deposit rate to rise at their (1980-85) historical level between 1986 and 1988, while inflation rate is as in historical series.

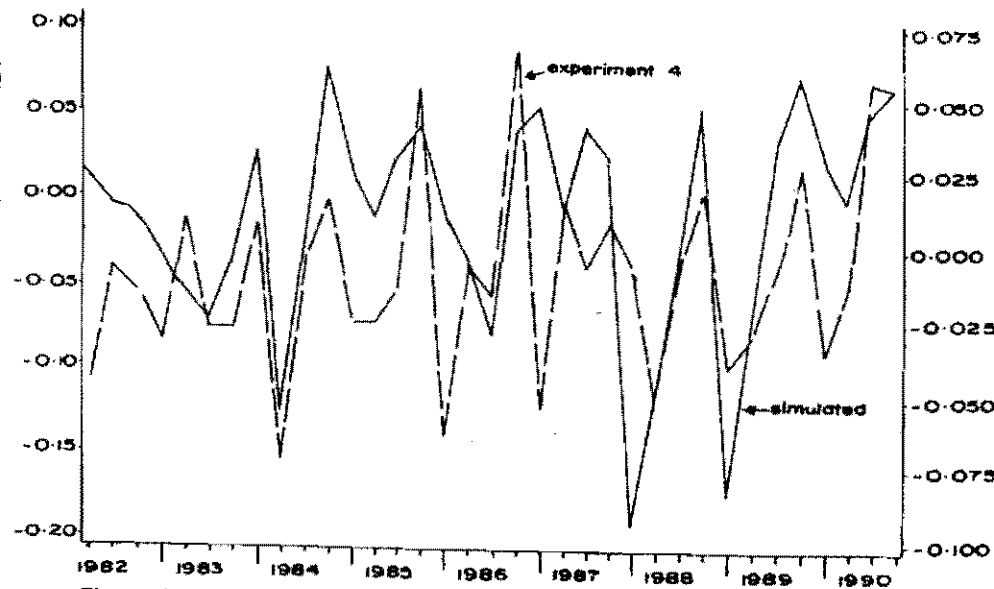


Figure 6(vi). NIGERIA: Experiment 4: Allowing for domestic interest rate to remain at their 1980-1 level throughout the period 1980-1 to 1990-4 and inflation rate to decline at 2-5% per quarter beginning from 1980-4 till 1990-4.

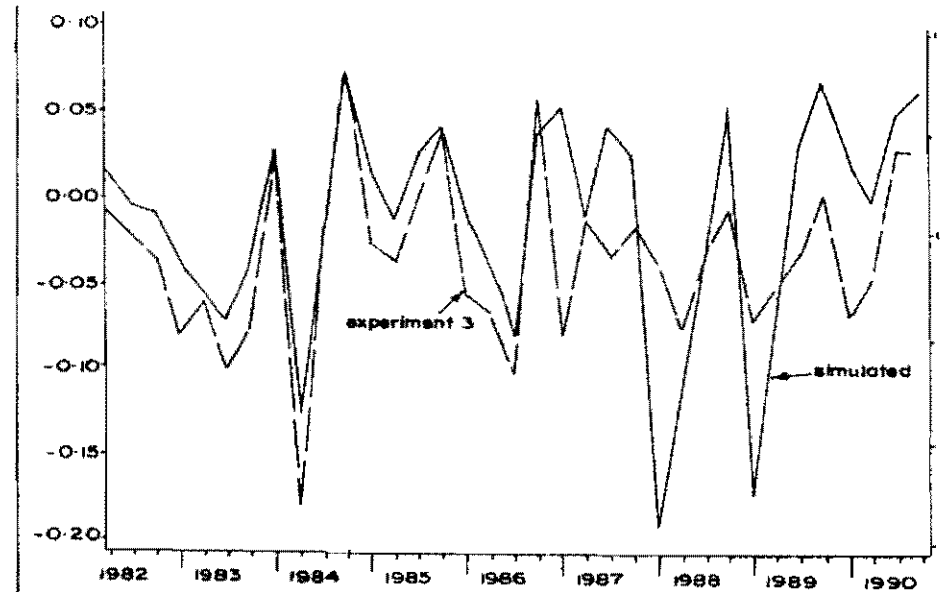


Figure 6(vii). NIGERIA: Experiment 3: Allowing for inflation rate to fall by 2-5% per quarter between 1987 and 1990 while nominal deposit rate remains as in experiment 2.

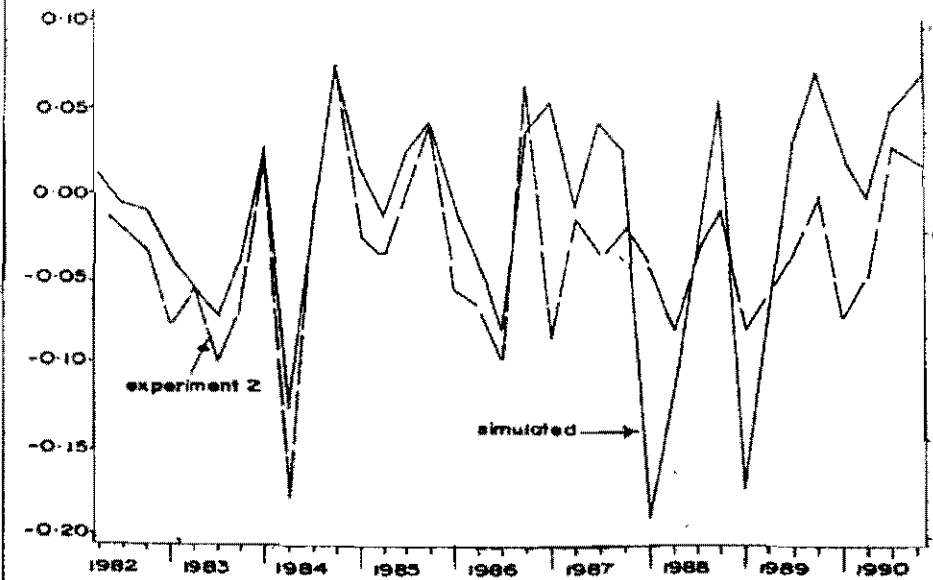


Figure 6(viii). NIGERIA: Experiment 2: Allowing for nominal deposit rate to rise at their (1980-86) historical level between 1987 and 1990 (ii) Allowing for inflation rate to rise at their (1980-86) historical level between 1989 and 1990.

References

- Adams, Dale W. (1984). "Are the arguments for cheap credit sound?" In: Undermining Rural Development with Cheap Credit, Dale Adams and J. D. Von Pischke, eds. (Boulder and London, Westview Press).
- Abebe, Adera (1992). The Financial Sector and Economic Development: Reflections on Africa. Finafrica-CARIPO, Milano.
- Adedeji, A. (1980). Draft Plan of Action for the implementation of the strategy for African Development for the 1980s
- Aghevli, B.B. and M.S. Khan (1978). "Government deficits and the inflationary process in developing countries," IMF, Staff Papers, Vol.25, No. 3, (September).
- Alberici, A. and M. Baravelli (eds.) (1973). Savings Banks and Saving Facilities in African Countries, Milan, Cariplo.
- Asian Development Bank (1985). Improving Domestic Resource Mobilization Through Financial Development, Manila, Philippines (September).
- Balassa, Bela (1989). "Financial Liberalization in Developing Countries" PPR Working Papers, World Bank, (September).
- Calvo, Guillermo A. (1992). "Are high interest rates effective for stopping high inflation? "Some sceptical notes", The World Bank Economic Review, Vol. 6, No. 1, (January).
- CBN, Annual Reports. Central Bank of Nigeria, Annual Reports and Statement of Accounts (1986-89)
- Chadanvakar, Anand G. (1992). Macroeconomic aspects, foreign flows and domestic savings performance in developing countries: A "state of the art" report. In: Savings and Credit for Development: Report of the International Conference on Savings and Credit for Development, Klarskovgard, Denmark, 28-31 May 1990.
- Chamley, C. and P. Honoham (1990). "Taxation of financial intermediation: Measurement principles and application to five African countries", Policy, Research and External Affairs Working Papers. World Bank, (May).
- Cho, Y.J. and Khatkhate D. (1989). "Lessons of financial liberalization in Asia: A comparative study " Discussion Paper No. 50, Washington, World Bank, (April).

- Corbo, Vittorio, Jaime de Melo, and James Tybout (1986). "What went wrong with the recent reforms in the southern cone" Economic Development and Cultural Change, 34 (3), (April).
- Crocket, Andrew (1981). "Stabilization policies in developing countries: Some policy considerations" IMF, Staff Papers, Vol. 28, (March).
- Daguefe Tafarra (1985). "Financial institutions and rural development in Africa", Savings and Development: Proceedings of a colloquium held in Paris, May 1984. Economica, Paris.
- De Melo, Jaime and James Tybout (1985). "The effects of financial liberalization on savings and investment in Uruguay" Economic Development and Cultural Change, (July).
- Diaz-Alejandro, Carlos (1985). "Goodbye financial repression, hello financial crash", Journal of Development Economics, 19 (1-2), (September-October).
- Dooley, Michael and Donald Mathieson (1987). "Financial liberalization in developing countries", Finance and Development, IMF and World Bank (Washington), Vol. 24, (September).
- Dornbusch, Rudiger (1992). "Lessons from experiences with high inflation", The World Bank Economic Review, Vol. 6, No. 1, (January).
- Dornbusch, Rudiger and Alejandro Reynoso (1989). "Financial factors in economic development", American Economic Review, Vol. 79 (May).
- Fischer, Bernhard (1981). 'Interest rate ceilings, inflation and economic growth in developing countries', Economics, Vol. 23.
- Fry, Maxwell J. (1978). Money and capital or financial deepening in economic development, Journal of Money, credit and Banking, Vol. 10, No. 4 (November).
- ____ (1981). "Money, interest, inflation and growth in Turkey", Journal of Monetary Economics, 6 (4), (October).
- ____ (1986). "Financial sector liberalization under oligopolistic conditions and a bank holding company structure", Savings and Development, 10 (2).
- ____ (1988). Money, Interest and Banking in Economic Development, John Hopkins University Press, Baltimore and London.
- Galbis, Vincente (1976). "Structuralism and financial liberalization", Finance and Development, 13 (2), (June).

- Gelb, Alan (1989a). "A cross sectional analysis of financial policies, efficiency and growth", PPR Working Paper 202, Washington D.C., World Bank.
- _____. (1989b). "Financial Policies, Growth and Efficiency", Working Papers, The World Bank, Washington D.C., (June).
- Gelb, A. and Patrick Honohan (1989). Financial sector reforms in adjustment programs, PPR Working Paper 169, Washington D.C., World Bank.
- Goldsmith, R. W. (1969). Financial Structure and Development, New Haven: Yale University Press.
- Gupta, K.L. (1984). Finance and Economic Growth in Developing Countries, Croom Helm Ltd., London.
- Gurley J.G. and E.S. Shaw (1967). "Financial structure and economic development", Economic Development and Cultural Change, Vol, 15, (April).
- _____. (1960). Money in a Theory of Finance, Washington D.C.: The Brookings Institution.
- Ikhide, S. I. (1992). "Financial liberalization and inflation: Is there a link in adjusting developing countries?", International Review of Economics and Business: Revista Internationale, (Forthcoming).
- _____. (1990). "On the deregulation of interest rates in Nigeria-Myths and Realities", The Nigerian Financial Review, Vol. III, No. 1 (March).
- Intrigilator, M.D. (1978). Econometric Models. Techniques and Applications, North Holland, Oxford.
- Jao, Y.C. (1976). "Financial Deepening and economic growth: A cross section analysis", Malayan Economic Review, 21 (1), (April).
- Johnson, H. G. (1967). "Money in a growth model", In: H.G. Johnson, Essays in Monetary Economics, Cambridge, Massachusetts, Unwin and Harvard University Press.
- Kapur, B.K. (1976). "Two approaches to ending inflation", In: R. Mckinnon (ed.), Money and Finance in Economic Growth and Development - Essays in honour of Edward S. Shaw, New York, Marcel Dekker.
- _____. (1976). "Alternative stabilization policies for less developed economies", In: Journal of Political Economy, (Chicago), (August).

- Khan, M.S. and J. S. Lizondo (1987). "Devaluation, deficits and the real exchange rate", The World Bank Economic Review, January, Vol. I, No. 2.
- Khan, M.S. and M.D. Knight (1982). "Some theoretical and empirical issues relating to economic stabilization in developing countries", World Development, Vol. I, No.2.
- Lewis, W.A. (1955). The Theory of Economic Growth, London, George Allen and Unwin.
- Long, Millard (1992). "Financial sector and economic development", In: Savings and Credit for Development; Report of the International Conference on Savings and Development, Klarskovgard, Denmark, 28-31 May.
- London, A. (1989). Money, inflation and adjustment policy in Africa: Some further evidence", African Development Review.
- Lucket, D.G. (1974). Money and Banking, (McGraw-Hill).
- Mckinnon, R.I. (1973). Money and Capital in Economic Development, Washington D.C., Brookings Institution.
- _____, ed. (1976). Money and Finance in Economic Growth and Development: Essays in honour of Edward S. Shaw, New York, Marcel Dekker.
- _____. (1982). "The order of economic liberalization: Lessons form Chile and Argentina", In: K. Brunner and A. Meltzer (eds.), Economic Policy in a World of Change, Vol. 17 of Carnegie-Rochester Conference Series on Public Policy, Amsterdam, North Holland Publishing Company.
- _____. (1988). "Financial liberalization in retrospect: Interest rate policies in LDCs", In: The State of Development Economics: Progress and Perspectives, ed. by Gustav Ranis and T. Paul Schultz (New York: Basil Blackwell Inc., 1989).
- _____. (1991). The Order of Economic Liberalisation, (John Hopkins University Press: Baltimore and London).
- Mckinnon, R.I. and D. J. Mathieson (1981). "How to manage a repressed economy", Princeton Essays in International Finance, (145), (December).
- Mathieson, D.J. (1980). "Financial reform and stabilization policy in a developing economy", Journal of Development Economics, 7 (3), (September).
- _____. (1982). "Inflation, interest rates and the balance of payments during a financial reform: The case of Argentina", World Development, 10 (9), September.

- Mauri, Arnaldo (1971). "Savings Banks in African countries", In: The Mobilization of Savings in African Countries, Proceedings of an international conference held in Milan (20-23 September).
- Molho, Lazarus E. (1986). "Interest rate, savings and investment in developing countries: A re-examination of the McKinnon-Shaw Hypothesis", IMF Staff Papers 33 (1), (March).
- Neal C. R. (1989). "Macro financial indicators for 17 developing and industrial countries", Policy Research and External Affairs Working Papers, The World Bank, (March).
- Nzemen, Moise (1989). "Tontines and banking", The Courier, African-Caribbean-Pacific-European Community, No.117, (September-October).
- Ojo, M.O. (1991). "Deregulation in the Nigerian Banking Industry, A review and appraisal", Central Bank of Nigeria, Economic and Financial Review, Vol. 29, (March).
- Okuda H. (1990). "Financial factors in economic development: A study of the financial liberalization policy in the Philippines, The Developing Economies, XXVIII-3, (September).
- Patrick, H.T. (1966). "Financial Development and economic growth in underdeveloped countries", Economic Development and Cultural Change, Vol.14, (January).
- Porter, R.C. (1966). "The Promotion of the 'banking habit' and economic development", Journal of Development Studies, Vol.2, (July).
- Porter, R.C. and S.I. Ranney (1982). "An eclectic model of recent LDC macroeconomic policy analysis", World Development, Vol. 10, No. 9, (September).
- Pindyck, R.S. and D.L. Rubinfeld (1984). Econometric Models and Economic Forecasts, McGraw-Hill Book Company, Singapore.
- Roe, A. R. (1989). Interest rate policy, employment and income distribution, In: Market liberalization, equity and development, G.T. Renshaw (ed.), ILO, Geneva.
- Shaw, E.S (1973). Financial Deepening in Economic Development, New York, Oxford University Press.
- Smith, L.D. and N.T. Spooner (1992). "The sequencing of structural adjustment policy instruments in the agricultural sector", In: Policy Adjustment in Africa, Chris Milner and J. Reyner (ed.), MacMillan.
- Snoek, H. (1989). "Problems of bank supervision in LDCs", Finance and Development, IMF and The World Bank, Washington, Vol.26, No. 4, (December) .

- Stiglitz, J.E. and A. Weiss (1981). "Credit rationing in markets with imperfect information", American Economic Review, 71, (June).
- Tait, A.A. (1989). "IMF advice on fiscal policy", Fiscal Affairs Department, IMF Working Paper 89/87, October, IMF, Washington.
- Tanzi, V. and M. Bleijer (1984). "Fiscal deficits and balance of payments disequilibrium in IMF adjustment programmes", In: Joaquin Muns (ed.) Adjustment, Conditionality and International Financing, IMF.
- Tobin, J. (1965). "Money and economic growth", Econometrica, 33 (14), (October).
- Thorton, J. (1991). "The financial repression paradigm: A survey of empirical research", Savings and Development, No. 1: XV.
- Umo, B.U. (1981). "Empirical tests for some savings hypothesis for African countries", Financial Journal, Vol. 2, No. 2, African Centre for Monetary Studies.
- UN-ECA (1989). African Alternative Framework to Structural Adjustment Programmes for Socio-economic Recovery and Transformation (AAF-SAP), Addis Ababa.
- UN-ECA (1990). The Feasibility Study on the Establishment of an African Monetary Fund, E/ECA/Trade/90/2.
- _____. (1990). A Survey of Banking Institutions and Their Potential Role in the Allocation of Resources for Development in Africa, Socio-Economic Research and Planning Division, Addis Ababa, (April).
- _____. (1980). Financial Repression and Its Impact on Financial Development and Economic Growth in Developing Africa, Department of Technical Co-operation for Development, Addis Ababa.
- _____. (1991). African Alternative to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation: Selected Policy Instruments, (June).
- Van Wijnbergen, Sweder (1982). "Stagflationary effects of monetary stabilization policies: A quantitative analysis of South Korea", Journal of Development Economics, 10 (2), (April).
- _____. (1983). "Credit policy, inflation and growth in a financially repressed economy", Journal of Development Economics, 13 (1-2), (August-October).
- _____. (1985). "Macroeconomic effects of changes in bank interest rates: Simulation results for South Korea", Journal of Development Economics, 18 (2-3), (August).

- Villanueva, D. and A. Mirakhor (1989). "Strategies for financial reforms", IMF Staff Papers, Vol. 37, No. 3, (September).
- Vogel, R. (1984). "Savings mobilisation: The forgotten half of rural finance", In: Undermining Rural Development with Cheap Credit (edited by Dale W. Adams, Douglas H. Graham, and J.D. Von Pischke), Westview Press, Boulder and London.
- Vogel, R. and S. Buser (1976). Inflation, financial repression and capital formation in Latin America", In; R.I. McKinnon (ed.), Money and Finance in Economic Growth and Development, Marcel Dekker Inc., New York.
- Von Pischke, J.D. (1983). "Towards an operational approach to Savings for Rural Developers", Savings and Development, No. I - VII.
- World Bank (1989). World Development Report, Washington D.C.

ECA STUDIES IN DEVELOPMENT RESEARCH PAPERS SERIES

<u>Number</u>	<u>Author</u>	<u>Title</u>	<u>Date</u>
1.	Mamou Kouyate-Ehui	Optimal Pricing Model for Primary Commodities in Developing Countries: An Application to the Cocoa Subsector in Cote d'Ivoire and Ghana. (Ref.: ECA/SERPD/1991/003)	April 1991
2.	Syvanus Ikhide	Financial Deepening, Credit Availability and the Efficiency of Investment: Evidence from Selected African Countries. (Ref.: ECA/SERPD/1992/004)	October 1992
3.	H. M. A. Onitiri	Devaluation and Structural Adjustment: The Nigerian Experience (Ref.: ECA/SERPD/1992/006)	November 1992
4.	Osman Mohamed Salama	The Food Gap in Egypt (Ref.: ECA/SERPD/1992/008)	December 1992